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COMPREHENSIVE PLAN VOLUME IV

LAND USE ANALYSIS AND INITIAL HOUSING STUDY

Eastern Band of Cherokee Indians

COMPREHENSIVE PLAN - VOLUME IV

LAND USE ANALYSIS AND INITIAL HOUSING STUDY

EASTERN BAND of CHEROKEE INDIANS

1974

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LAND USE ANALYSIS AND INITIAL HOUSING STUDY

EASTERN BAND of CHEROKEE INDIANS

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INTRODUCTION

The responsibility of guiding the future use of the Cherokee Reservation is under the jurisdiction of the Cherokee Tribal Council and through the Cherokee Planning Board to which has been designated planning authority from the Council. Planning physical development demands the assistance and cooperation of various members of the Tribe as well as the community clubs. The duty of the Planning Board is to make careful study of the resources, possibilities and needs of the Reservation, particularly with respect to the conditions which may be injurious to the public welfare, and to then make future plans for the orderly and beneficial development of the Eastern Band of Cherokee Indians' lands.

Purpose

An essential element in the research of planning for the Cherokee Indian Reservation is land use information. This means the fact gathering and data collection of knowledge of the use or activities to which the land is being put at the current time. In order to accurately establish trends in development, data or information gathered at a specific time in history needs similar data from an earlier period to be used for comparison. A comprehensive inventory and analysis does therefore have long range usefulness.

This land use data will be used by the planner and planning board as a basis for formulating the future long-range land development plan for the community.

Objectives

The writing of this report is primarily intended to accomplish the following purposes:

(1) To provide a reliable and detailed account of the significant developmental factors now present in the lands owned by the Eastern Band of Cherokee Indians.

(2) A land development plan for the Cherokee Indian Reservation will be developed from the information contained in this analysis which will be the basis for a continuing planning program.

THE PLANNING AREAS

The Eastern Band of Cherokee Indians has a total of 56,572.80 acres which are scattered over five counties. There are various methods of classifying the land into sub-planning areas by Tribal standards for which the Tribe has special and purposeful uses. These land related sub-areas parallel closely the same geographic subdivisions used by the Band for population enumeration and they are equally important in matters of land use and land use planning. In order to gain knowledge of the complex land classification systems commonly used by the Eastern Cherokees, each of the main categories and their subdivisions are tabulated below with the area in acres listed where known:

A.	By County	Acres
1.	Cherokee	5,571.00
2.	Graham	2,249.00
3.	Haywood	80.00
4.	Jackson	19,267.00
5.	Swain	29,405.80
	Total	56,572.80

B.	By Township (Tribal Voting Districts)	Acres
1.	Big Cove	13,911
2.	Birdtown	7,622
3.	Painttown	3,019
4.	Snowbird	7,820
5.	Wolftown	16,248
6.	Yellow Hill	3,852
	Sub-Total	52,472
	Government owned, Federal, State & BIA Highway, Blue Ridge Parkway R/W & Others	4,101
	Total	56,573

C.	By Community	Acres
1.	3,200 Acre Tract	3,200
2.	Big Cove	13,911
3.	Birdtown	4,422
4.	Cherokee County Tract	5,571
5.	Cherokee	3,852
6.	Painttown	3,019
7.	Snowbird Tracts	2,249
8.	Soco	13,238
9.	Big Y	3,010
	Sub-Total	52,472

State, Federal & BIA Roads (60' R/W)	1,059
Blue Ridge Parkway (R/W)	1,320
Government Owned	129
Other (unidentified)	1,593
Total Acres	56,573

An inconsistency exists with the number of acres in the various communities in relationship to the number of Reservation acres in each of the five counties. The amount of 1,593 acres under "other or unidentified" will be accurately identified during the surveying process which is currently being performed by the Bureau of Indian Affairs. All the acreage figures in this study must be considered as estimates or approximates until the survey is completed; a matter that will take a number of years.

D. By Major Tract Area or Boundary

1.	Qualla Boundary		45,423.78
	Swain County	26,076.78	
	Jackson County	19,267.00	
	Haywood County	80.00	
2.	Cherokee County		
	25 Tracts		5,571.00
3.	Graham County		
	25 Tracts		2,249.00
4.	3200 Acre Tract		
	Swain County		3,200.00
	Total Tribal		56,443.78

E. Major Land Ownership Distinctions	Acres
1. Possessory Holdings (approximate)	50,933.57
2. Tribal Reserve (approximate)	5,510.21
3. U. S. Government Owned	129.02
	56,572.80

Reservation lands consist of 52 tracts or boundaries which are contained in 30 completely separated bodies of land. Four of the tracts have smaller deeded parcels, or land held in fee simple, within their boundaries - a matter that further complicates the physical domain of the Cherokees. Qualla boundary contains three parcels of deeded or "white" land, the 3200 Acre tract has three large deeded plots within its bounds and one large area that is totally contained except for a small opening. In Cherokee County, the Henson Donation has three tracts of white land within its bounds, all of which are considerable in size. To the east of the Henson Donation is tract number 2 which has one large and one small parcel of deeded land within its confines, making a total of 12 areas of deeded land within Reservation lands which must be excluded in the planning program except for general planning purposes.

The Tribal Council of the Eastern Band of Cherokee Indians has the power of land management for the Tribe's land which is held in trust for the Eastern Cherokees by the U. S. Government. Council clearly has powers of eminent domain, but has thus far not been delegated any specific extraterritorial powers by the State of North Carolina or by any branch of the Federal Government. Use of such powers has apparently been untested and for the present planning activity, only those lands defined as belonging to the Eastern Band of Cherokee Indians will be included in the planning process.

LAND USE CLASSIFICATION WITH ACRES

Classification systems of Land use activities have been arranged to group certain similar types of Land uses. This method helps to facilitate the analysis of the land use data. Major land use classifications were designated into ten categories for the built up area of the Reservation and three main classifications for the Qualla Boundary and the 3200 Acre Tract. The Cherokee County Tracts and the Graham County Tracts have but two major land uses which are residential and forest.

Built Up Area Descriptions

The built up area is described as the land along U.S. Route 19 east of Cherokee Gap through Soco Valley up to and including Holiday Inn Travel Park Campground - Maps #2 and #3;

Lands west of Cherokee Gap along U. S. Route 19 through and including the main village of Cherokee, (Here a portion of highway serves U. S. Route 441 as well as U. S. Route 19)- shown on Map #1;

Lands along U. S. Route 441 from the Great Smoky Mountains National Park boundary south to its intersection with U, S. Route 19, (Route 441 parallels the Oconaluftee River) - Map #1;

Lands along N. C. Route 1368 (locally known as the "Back Side of the River" or Acquoni Road), from its intersection in Cherokee

Village with U.S. 441 and U.S. 19 going north up to the third bridge crossing of the Oconaluftee River (or up to and including Saunooke Motel), Map #1.

2. Classifications

These categories of land usage for the Built Up Area are primarily based on a functional classification, that is, according to their function in serving man's needs and well being.

The classifications of functional land usage and their definitions are as follows:

1. Residential - The predominate use of the structure on the land is devoted to the housing of individuals, families, and groups of people. This category includes structures containing one or more dwelling units, including single and multiple-family household units, mobile homes and mobile home parks, and institutional-residential. The latter category includes government housing for Bureau of Indian Affairs personnel and for U.S. Public Health Service personnel.

2. Commercial - Establishments which supply commodities and/or services to the general public. Any activity dealing in retail or wholesale trade or establishments of a business character which supply general needs of an intangible nature to the public.

3. Industrial - Establishments which are engaged in the manufacture or storage of tangible products. Those activities which are engaged in the processing or fabrication of raw materials or the production of commodities or materials.

4. Governmental - Structures which are predominately used for services or activities that are financed by federal, state, local or Tribal Funds. In the case of the Eastern Band of Cherokee Indians, governmental includes schools, hospital, civic center, community services, Post Office, sales office for fishing permits and a conglomerate array of structures utilized by the different departments of the Tribe, the Bureau of Indian Affairs and the Public Health Service.

5. Semi Public - Includes such land uses as: (a) social and cultural activities, (b) churches and (c) utilities. These facilities provide for the physical, mental and spiritual development and cultural enlightenment of the Reservation's citizens.

6. Vacant Land - Those areas of land on which a functional use is not evident except farming or pasture. This classification also includes rivers, streams, roads and some forested lands. These parcels are scattered throughout the built up areas of Cherokee and a few large holdings occur along the periphery.

Qualla Boundary and 3200 Acre Tract

A map is included in the Forest section of this study which shows three major land uses of the two primary tracts of the Reservation. These three classifications are:

1. Sawtimber (all classes) - stands containing ocnsiderable proportions of sawtimber-size trees; with hardwoods of the 12 inch

diameter class and larger, and conifers of the 10 inch diameter class and larger.

2. Poles and Saplings

   a. Poles - Stands predominantly consisting of trees in the 4 inch to 10 inch (conifers, 4-to-8 inch) diameter classes and containing very few, if any, sawtimber-size trees.

   b. Saplings - Stands predominantly consisting of trees smaller in size than the 4 inch diameter class and containing very few, if any sawtimber-size trees.

3. Not Forested

This category delineates those areas that are farms, developed areas, clearings, brush, bare ground, river and Parkway Right-of-way.

Other portions of this study will relate to land use classifications which are not shown here, such as soils, housing, roads and utilities.

Land uses and the approximate acres of each category are presented in the following tabulation of the 56,573 acres belonging to the Eastern Band of Cherokee Indians. A remarkable 88 percent of the Tribe's Land (49,784 acres) is virtually unusable for general development purposes other than timber harvesting. All other uses including vacant land take place on 6,789 acres.

TABULATION OF TOTAL ACRES

Land Use	Estimated Acres	Percent of Total
Forest	49,784	88.00
Blue Ridge Parkway R/W	1,320	2.33
U.S. & N.C. Highway R/W	159	.28
BIA Roads R/W	763	1.35
Residential - Possessory	1,448	2.56
Residential - Leased	409	.72
Commercial - Possessory	350	.62
Commercial - Leased (incl. CHA & Campgrounds)	716	1.27
Industrial - Leased	25	.04
Governmental	129	.23
Social & Cultural	10	.02
Recreation	72	.13
Utilities & Landfill	100	.18
Out Buildings	3	.01
Vacant Land (incl. Waterways)	516	.96
Churches	25	.04
Agriculture Crops	714	1.26
Total Acres	56,573	

C.H.A. - Cherokee Historical Association
R/W - Right-of-way

SOURCE: Estimates computed by N. C. Department of Natural & Economic Resources - Division of Community Assistance

Base figures obtained from the Cherokee Indian Agency

A clearer picture of land uses for the currently usable land is shown in the next table by percentages of the 6,789 acres and excluding the forests.

TABULATION OF TOTAL USABLE ACRES

Land Use	Estimated Acres	Percent of Total
Blue Ridge Parkway R/W	1,320	19.44
U.S. & N.C. Highway R/W	159	2.34
BIA Roads R/W	763	11.24
Residential - Possessory	1,448	21.33
Residential - Leased	409	6.02
Commercial - Possessory	350	5.16
Commercial - Leased (incl. CHA & Campgrounds)	716	10.56
Industrial - Leased	25	.37
Governmental	129	1.90
Social and Cultural	10	.15
Recreation	72	1.06
Utilities and Landfill	100	1.47
Out Buildings	3	.04
Vacant Land (incl. Waterways)	546	8.04
Churches	25	.37
Agricultural Crops	714	10.51
Total Usable Acres	6,789	

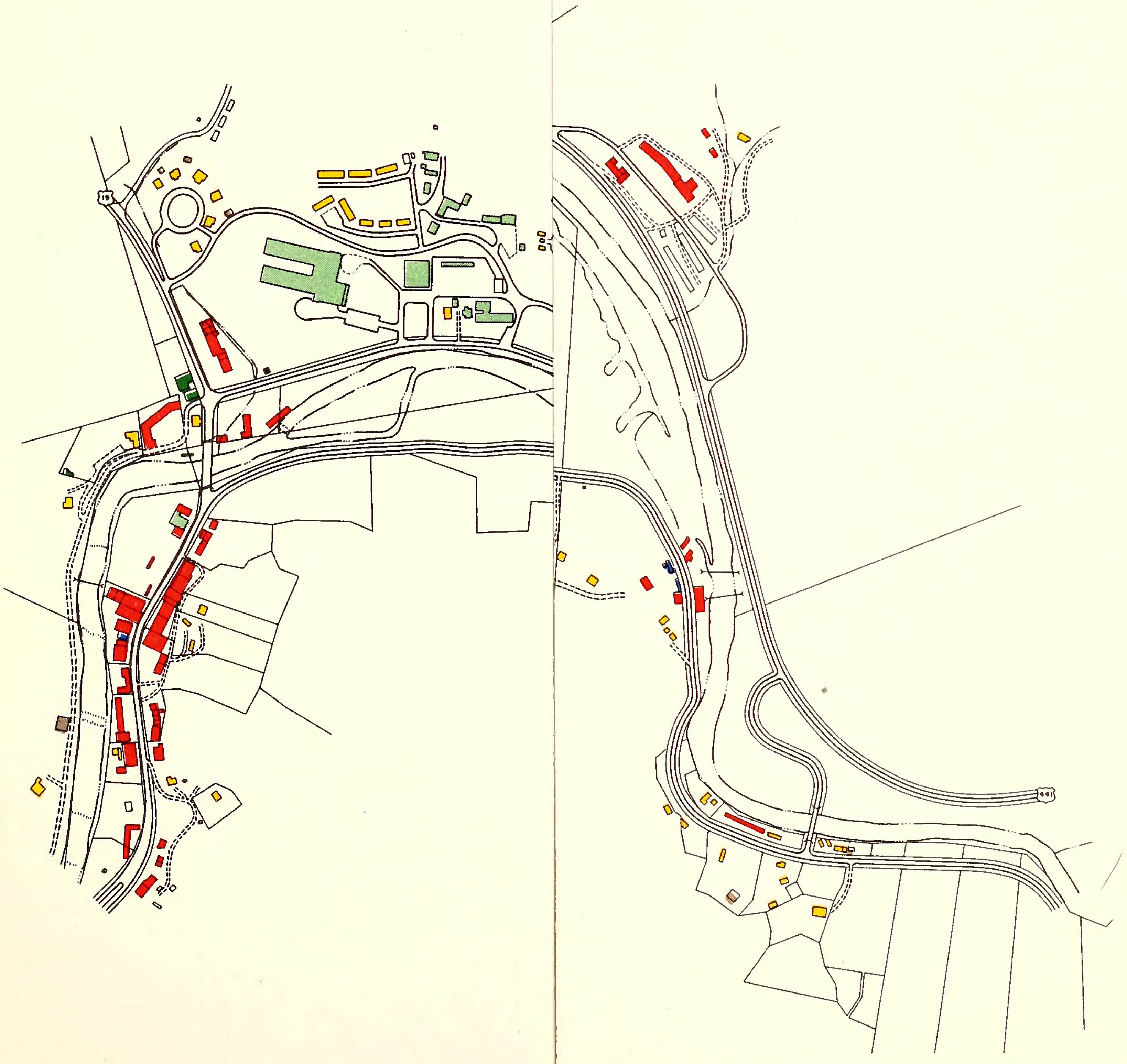
CHA - Cherokee Historical Association
R/W - Right-of-way

EXISTING LAND US

EAST AND WEST S
OCONALUFTEE RIVE

200 0 200 400 600 800 1000
SCALE OF FEET

MAP 1



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Governmental	129	1.90
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Recreation	72	1.06
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Out Buildings	3	.04
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Churches	25	.37
Agricultural Crops	714	10.51
Total Usable Acres	6,789	

CHA - Cherokee Historical Association
R/W - Right-of-way

EXISTING LAND USE - BUILT UP AREA

EAST AND WEST SIDES OF THE OCONALUFTEE RIVER

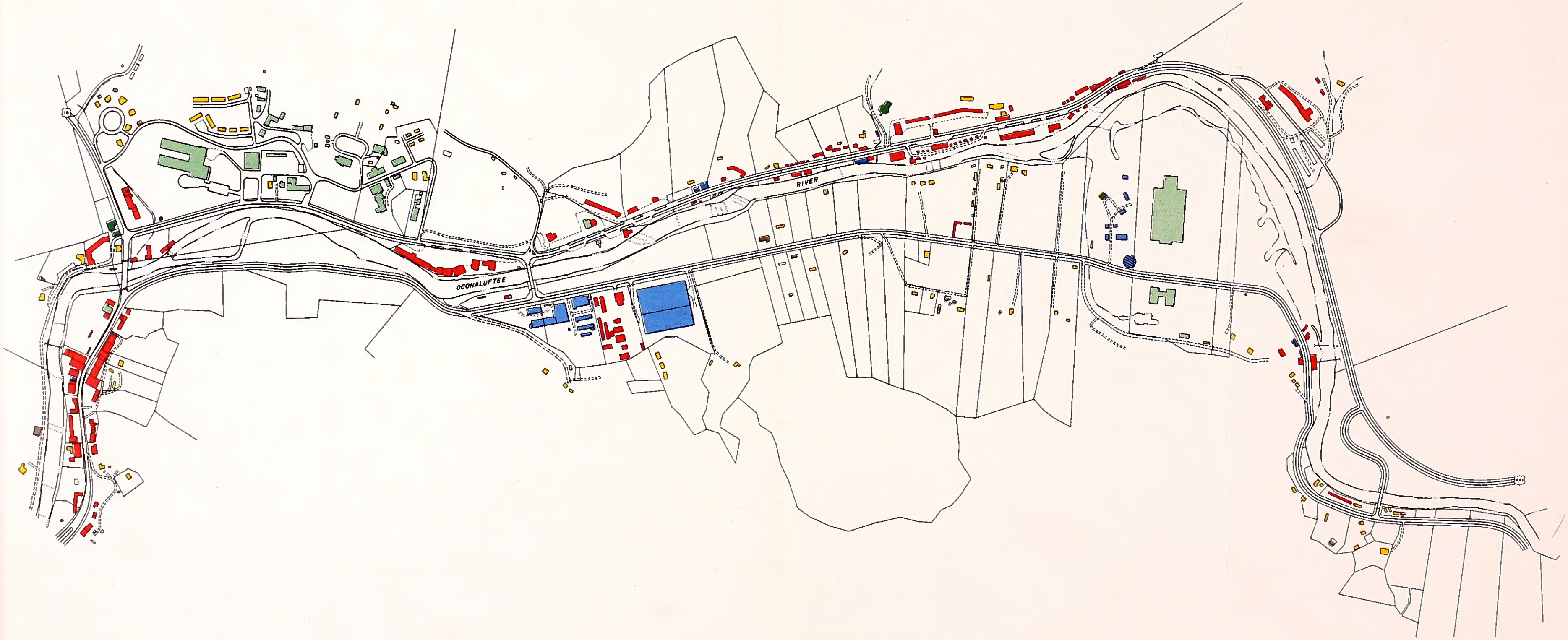
LEGEND

- 🟨 RESIDENTIAL
- 🟥 COMMERCIAL
- 🟦 INDUSTRIAL
- 🟩 GOVERNMENTAL SERVICE
- 🟫 SOCIAL AND CULTURAL
- 🟦 RECREATION
- 🟩 CHURCH
- ⬛ UTILITY
- 🟫 OUTBUILDING

200 0 200 400 600 800 1000
SCALE OF FEET

NORTH

MAP 1



EXISTING LAND U

SOCO VALLEY - WES

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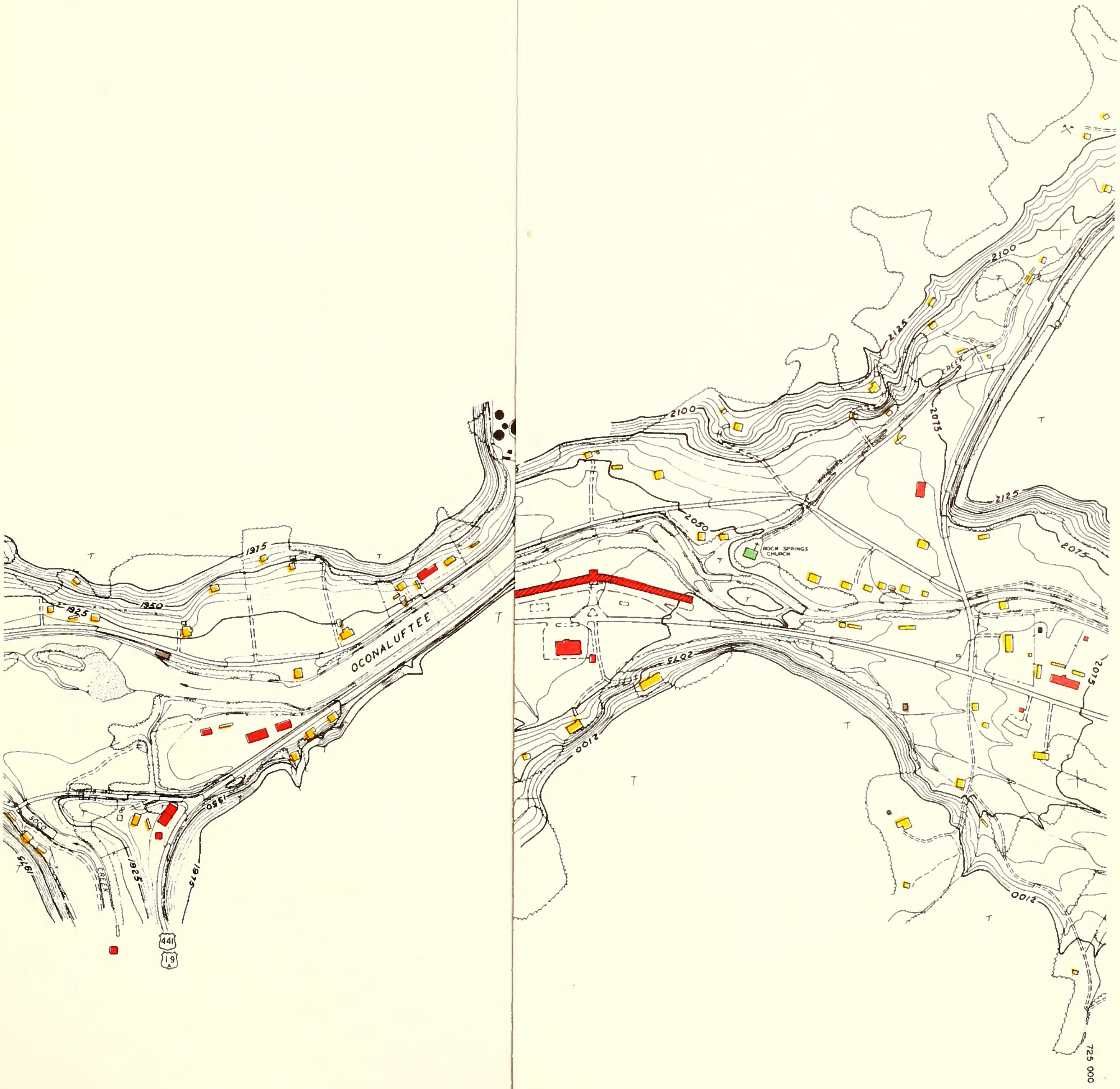
SCALE IN FEET

MAP 2



EXISTING LAND USE - BUILT UP AREA

SOCO VALLEY - WEST

LEGEND

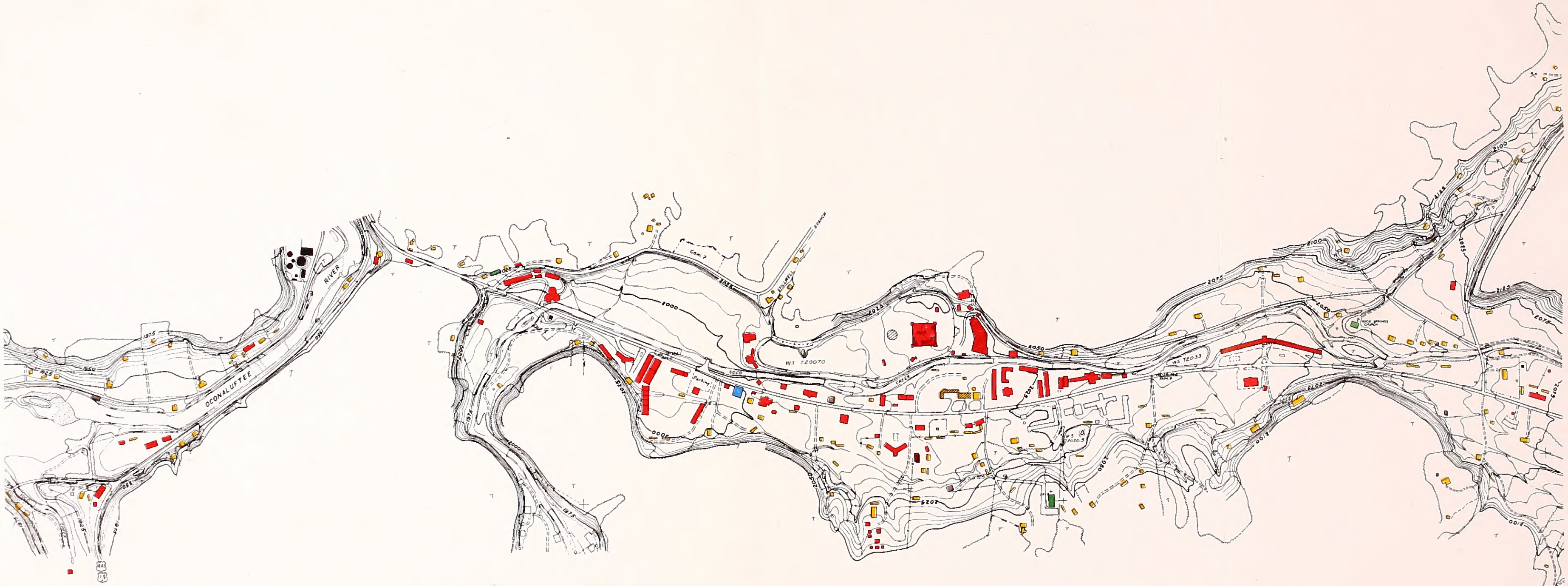
- 🟨 RESIDENTIAL
- 🟥 COMMERCIAL
- 🟦 INDUSTRIAL
- 🟩 GOVERNMENTAL SERVICE
- 🟫 SOCIAL AND CULTURAL
- 🟦 RECREATION
- 🟩 CHURCH
- ⬛ UTILITY
- 🟫 OUTBUILDING

200 0 200 400 600 800 1000

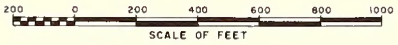
SCALE IN FEET

NORTH

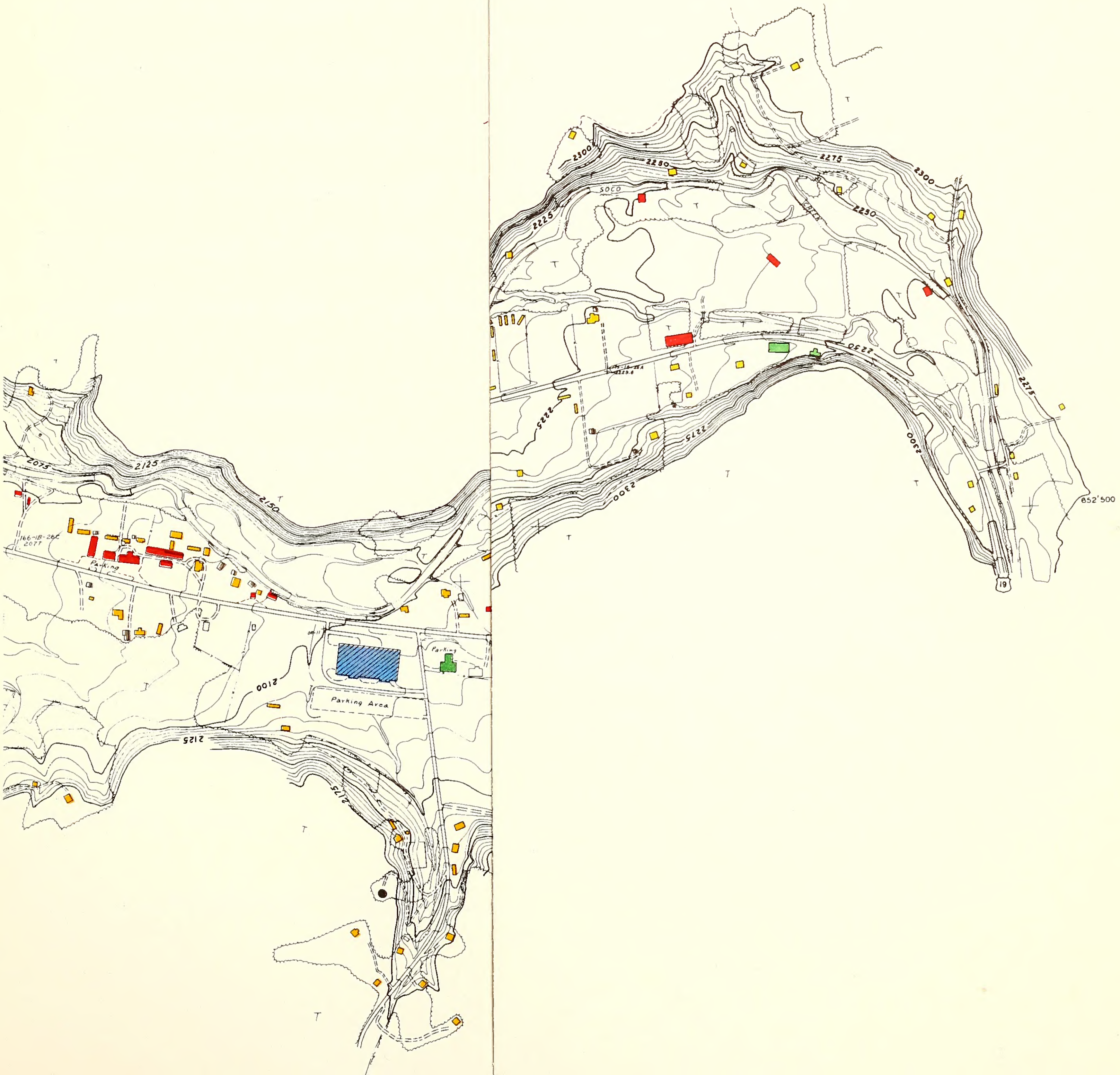
MAP 2



EXISTING LAND U
SOCO VALLEY - EAS



MAP 3



EXISTING LAND USE - BUILT UP AREA

SOCO VALLEY - EAST

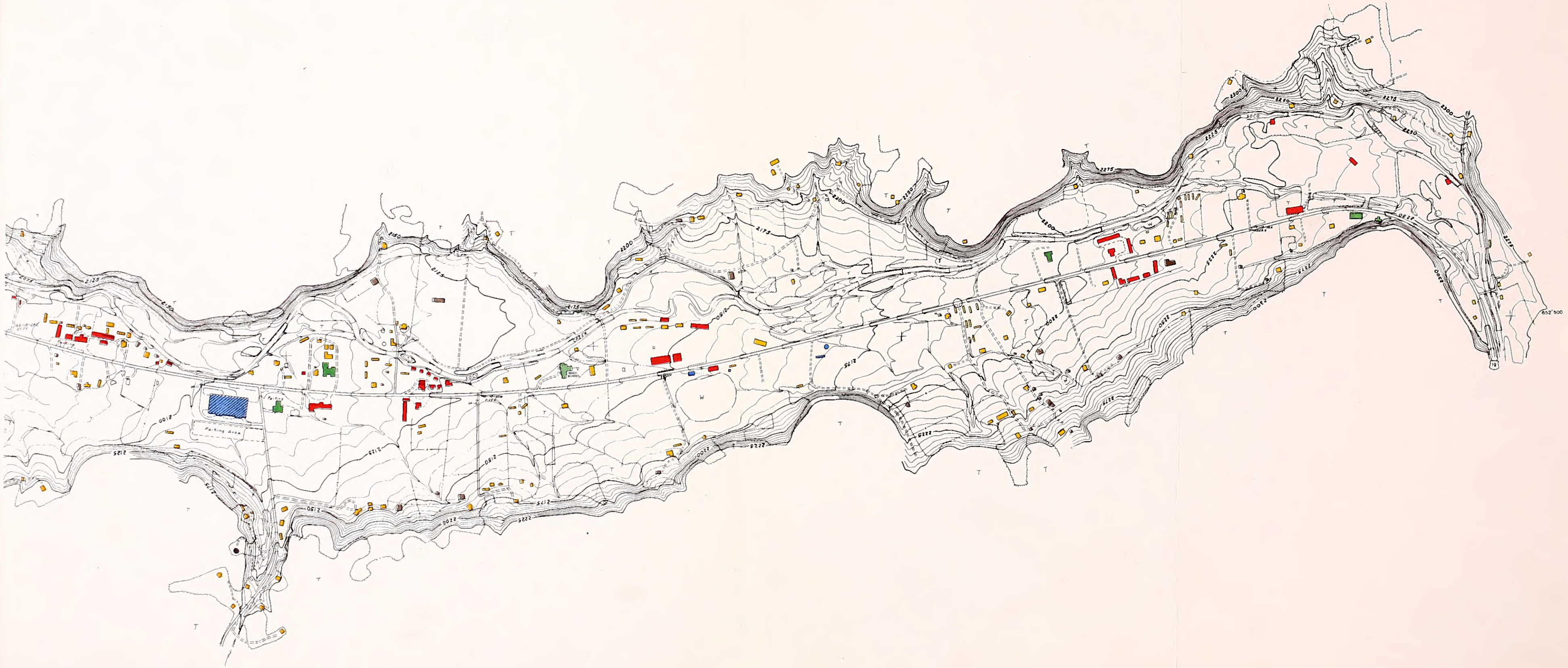
200 0 200 400 600 800 1000
SCALE OF FEET

NORTH

LEGEND

🟨 RESIDENTIAL
🟥 COMMERCIAL
🟦 INDUSTRIAL
🟩 GOVERNMENTAL SERVICE
🟫 SOCIAL AND CULTURAL
🟦 RECREATION
🟩 CHURCH
⬛ UTILITY
🟫 OUTBUILDING

MAP 3



THE PHYSICAL DEVELOPMENT

Development on the Qualla Boundary of the Cherokee Indian Reservation has primarily occurred along the major highways, U.S.Route 441 and 19, into what is known as strip development,' scatteration and sprawl of land uses. This growth, consisting largely of service and retail establishments catering to tourism has come about very rapidly, and has been characterized by haphazard patterns of development. In many cases exist a low standard of design of the individual commercial structures. Results of this can be readily observed; motels and craft shops that generally are unattractive, and at some points, traffic congestion and parking defficiencies that make it impossible to tap more than a fraction of the potential car-bound market, to say nothing of the movement of traffic.

Strip development extending along major highways causes problems of extension, expansion and renewal of the physical structures adequate to meet the needs of their people. If the existing trend of unplanned growth is continued the Tribe will suffer from added congestion, inefficiency, and unattractive patterns of development that will cause blight on what might otherwise become a most distinctive and prosperous tourist and vacation area.

Fortunately, most of the residential structures and motels are set back an adequate distance from the highway. The Oconaluftee River and portions of Soco Creek add an aesthetic value to the developed areas of the Reservation and should be preserved and beautified as should the fair grounds between the Council House and the Qualla Arts and Crafts Co-op.

The lower Village area and portions of the upper Village area have developed on land and terrain which is unsuited to the type of growth that has occurred. Most of the structures are on property that has been excavated or filled. Buildings are so close to the pavement of the two major routes that traffic congestion is paramount during the tourist season. Parking along this area backs into the moving traffic causing great safety hazards and is far below the desired standard for parking areas which is three or four times the floor space of commercial buildings. Delivery trucks that must service these businesses from the highway, add to the traffic congestion.

An area that is experiencing intense growth such as Cherokee needs to give serious thought to long range development and concern over both the existing patterns of development and the need for guidance of future growth, particularly commercial development. Communities must develop according to long range plans to insure that land is used to the best possible advantage. Big Cove is currently the only community experiencing commercial growth other than that along the major highways in Soco, Painttown, Birdtown and Cherokee Communities.

Since the opening of the Great Smoky Mountains National Park and the Blue Ridge Parkway, the Cherokee found they were in a strategic position to provide necessary services and accommodations for the touring public. In 1933, approximately 375,000 visitors passed through Cherokee, in 1953 about 2,250,772 visitors and in 1973, over 7,000,000 tourist passed through the Qualla Boundary.

Year	# Visitors	# Increase	% Increase
1933	375,000		
1953	2,250,772	1,875,772	500
1973	7,000,000	4,749,228	211
1993 (Projected)	10,920,000	3,920,000	56

As the above figures from the National Park Service, except the projected figures by the North Carolina Department of Natural and Economic Resources, show, continued visitation and commerical growth is expected in Cherokee. An important factor, not to be underestimated is the population growth that the Cherokees are experiencing for which housing and services will have to be provided.

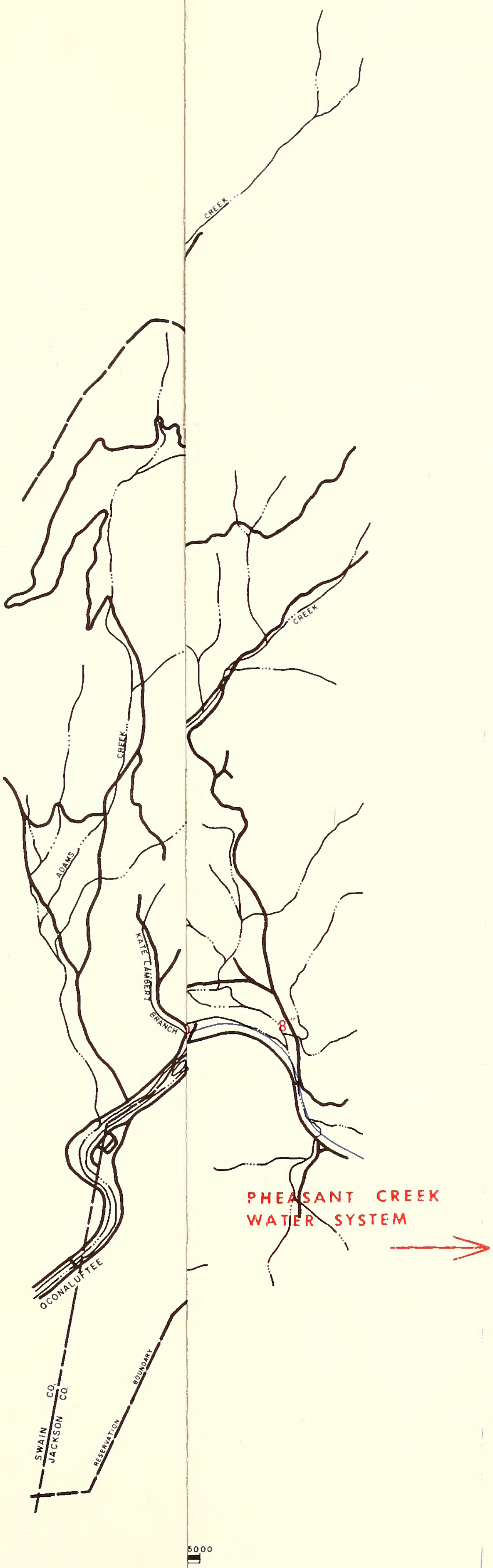
The Cherokee Indian Reservation is fundamentally an area distinguished as being rural in character but faces relatively urban-type problems of commercial development and traffic circulation. Typical of vacation areas or communities catering to the touring public is the necessity of providing water, sewer, sanitation, law enforcement and other community services for a small city during the vacation season and having these services only partially utilized during the remainder of the year.

Water and Sewer

Tribal water and sewer lines currently serve only the built up area of the Qualla Boundary. All other businesses and residences have either wells or springs for water supply and use either septic tanks or "package" treatment plants for sewage. Existing water and sewer lines are shown on Maps #4 and #5. These lines service a relatively small area which is composed of predominately commercial, governmental, industrial and a small number of residential uses. Customers of the Cherokee Tribal Water and Sewer Enterprise are not all served by both water and sewer as is indicated below:

Water and Sewer	239	Customers
Water Only	129	Customers
Sewer Only	10	Customers
Total	378	

Strip and scattered development have thus far created an economic hardship on the Water and Sewer enterprise due to the low-density of users in relation to the miles of line which must be maintained. The need for expansion of the three water systems and the sewerage system is necessary before further growth can occur in the built up area. During the peak of the tourist season all four systems operate either at or above capacity as shown in the tabulation below.


CREEK
CREEK
CREEK
ADAMS
KATE LAMBERT
BRANCH
8"
PHEASANT CREEK
WATER SYSTEM
OCONALUFTEE
SWAIN CO.
JACKSON CO.
RESERVATION
BOUNDARY
5000

EXISTIN

law enforcement and other community services for a small city during the vacation season and having these services only partially utilized during the remainder of the year.

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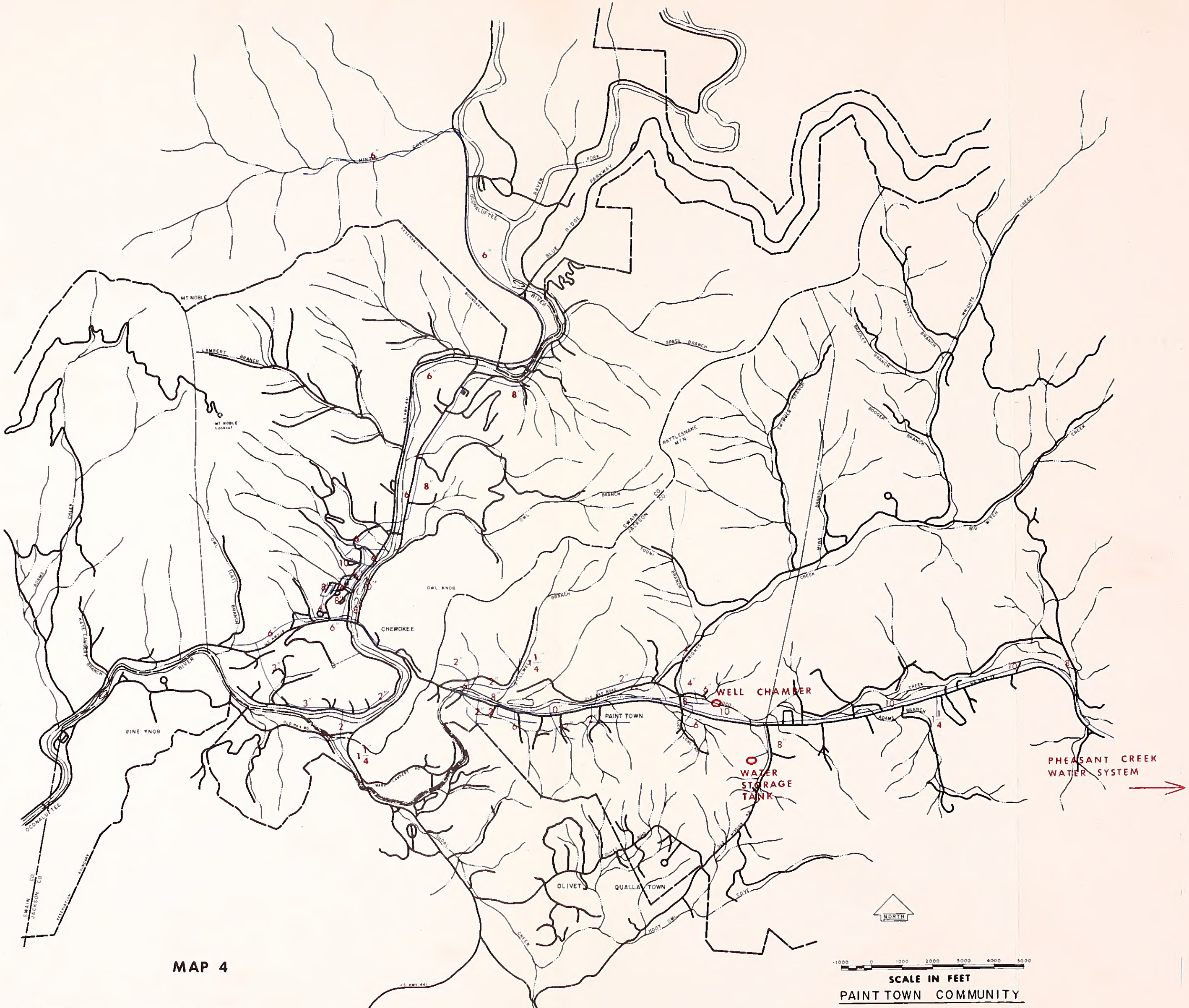
Tribal water and sewer lines currently serve only the built up area of the Qualla Boundary. All other businesses and residences have either wells or springs for water supply and use either septic tanks or "package" treatment plants for sewage. Existing water and sewer lines are shown on Maps #4 and #5. These lines service a relatively small area which is composed of predominately commercial, governmental, industrial and a small number of residential uses. Customers of the Cherokee Tribal Water and Sewer Enterprise are not all served by both water and sewer as is indicated below:

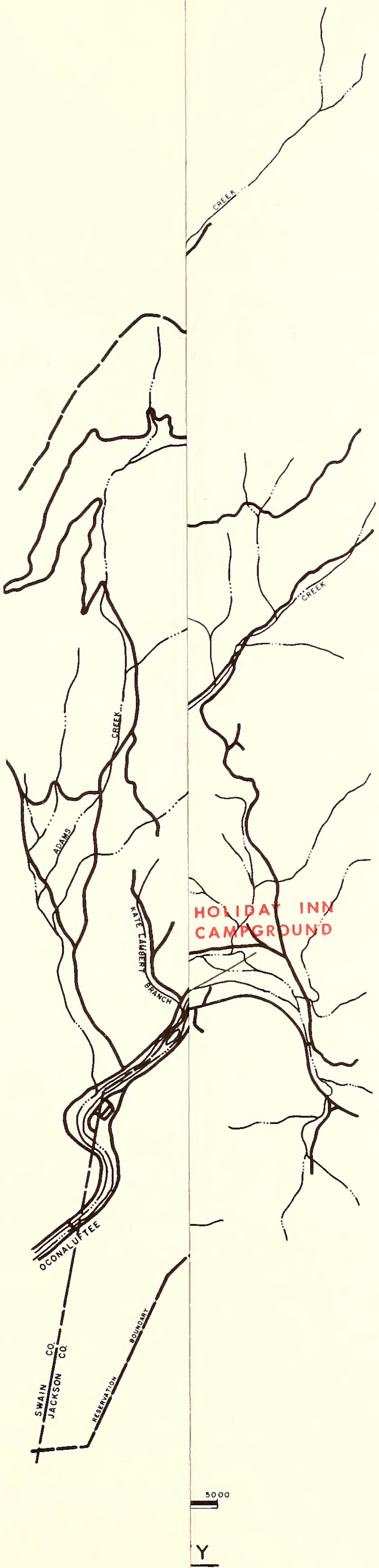
Water and Sewer	239	Customers
Water Only	129	Customers
Sewer Only	10	Customers
Total	378	

Strip and scattered development have thus far created an economic hardship on the Water and Sewer enterprise due to the low-density of users in relation to the miles of line which must be maintained. The need for expansion of the three water systems and the sewerage system is necessary before further growth can occur in the built up area. During the peak of the tourist season all four systems operate either at or above capacity as shown in the tabulation below.



MAP 4

EXISTING WATER LINES


CREEK
CREEK
CREEK
ADAMS
KATE LAMBERT BRANCH
HOLIDAY INN
CAMPGROUND
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JACKSON CO.
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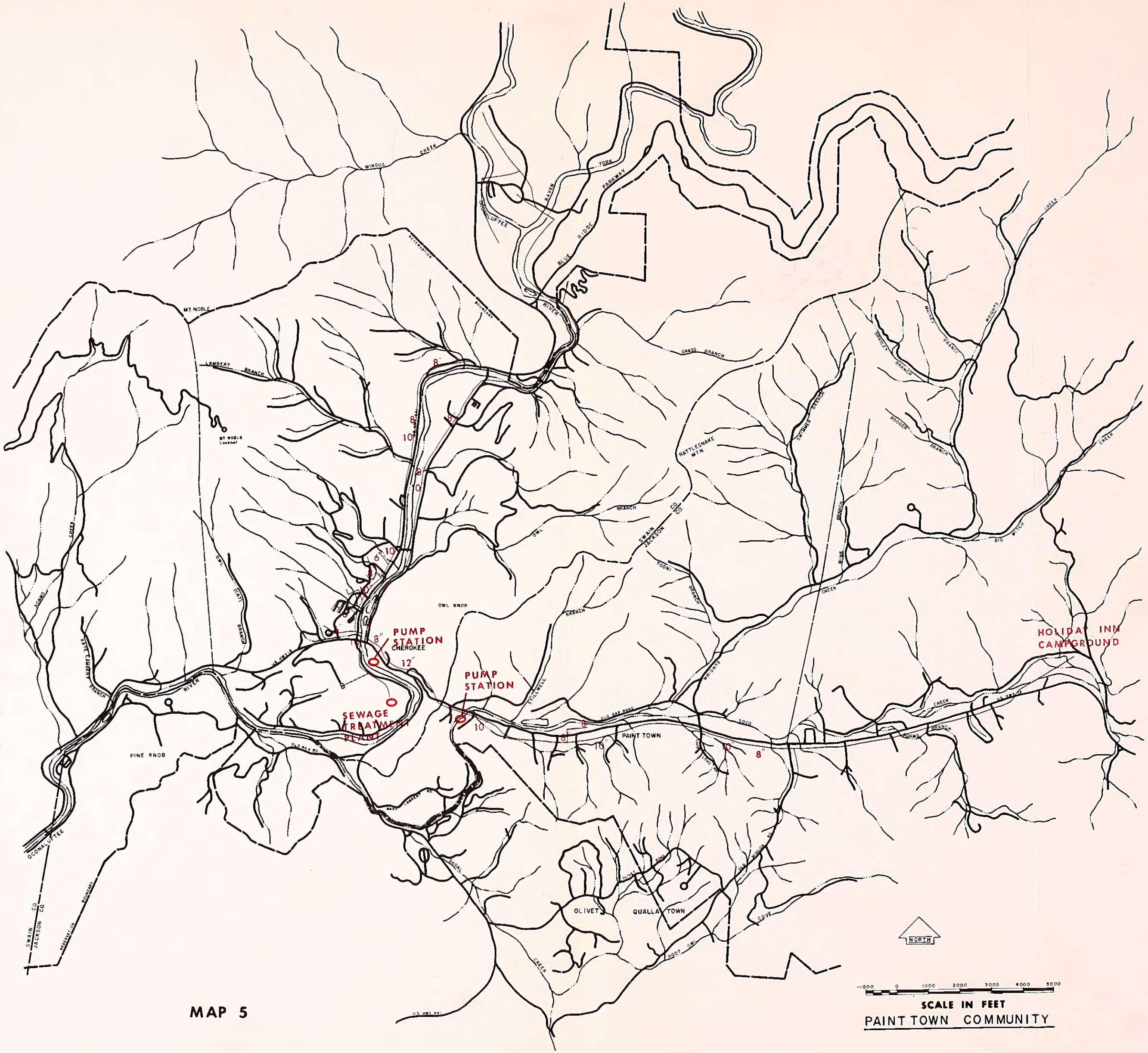


MAP 5

EXISTING SEWER LINES

Water System	Designed Capacity	Producing
Mingus Creek	325 GPM	500 GPM
Soco Well	200 GPM	200 GPM
Pheasant Creek	50 GPM	100 GPM
Sewer System	Capacity	Operating @
(One Plant) (500 GPM Capacity)	.75 MGD	.75 MGD

GPM = Gallons per Minute

MGD = Million Gallons per Day

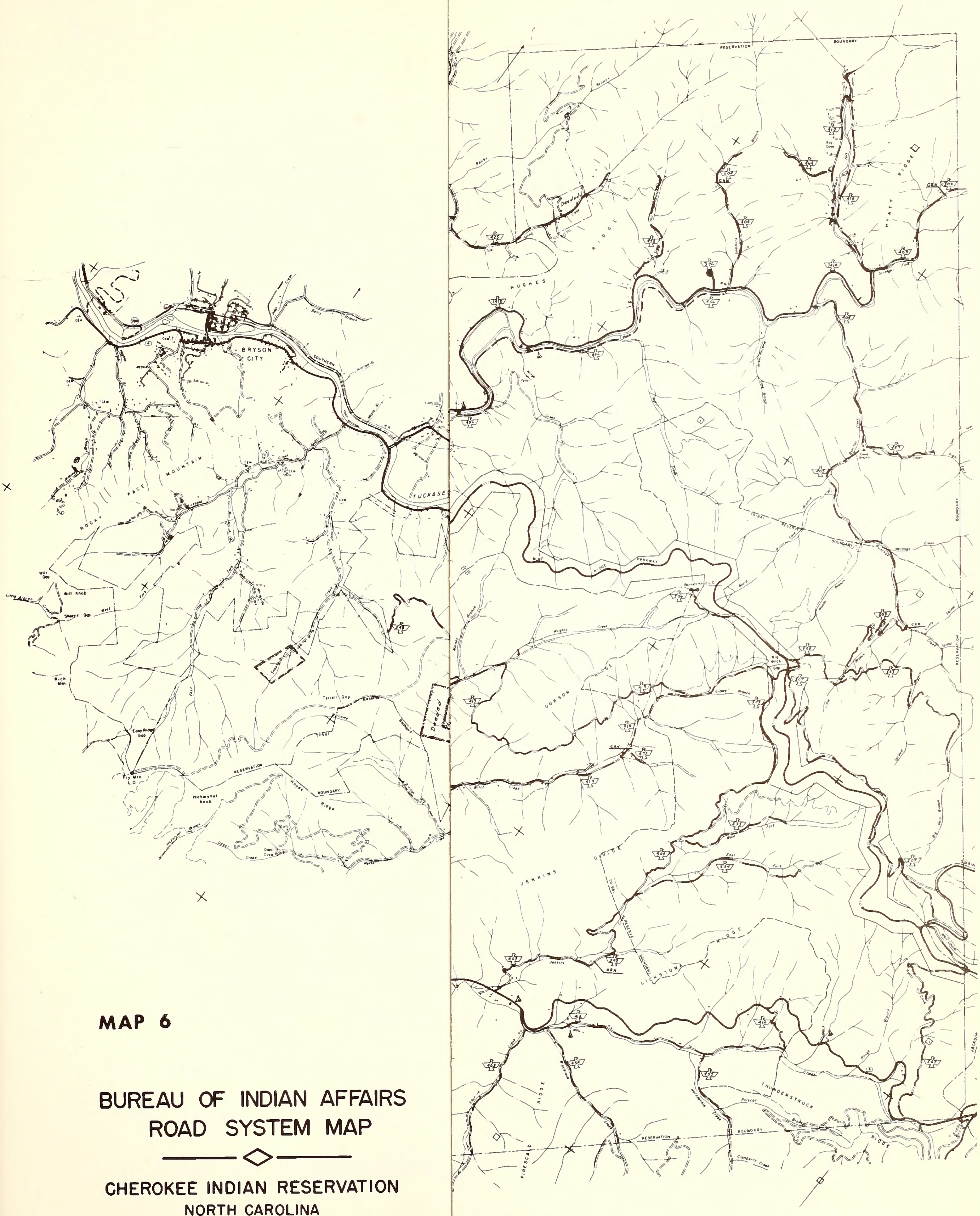
The Mingus Creek water system has 380 GPM treated flow the year round and is producing 500 GPM during the tourist season, which is 175 GPM more than the rated capacity. The Soco Well produces 200 GPM at capacity but is running 24 hours a day with all it can produce being used. This well feeds into a 300,000 gallon storage tank that has a depth of 34 feet of water normally. During the fourth of July weekend the water level was only eight feet. The new Pheasant Creek system has a normal capacity of 50 GPM but is producing 100 GPM by being manually operated and being backwashed as much as three times a day, (this system has a high pressure filter).

The Cherokee sewer system has a capacity of 500 GPM or .75 MGD. The system normally runs at approximately .36 MGD but operates at capacity during the middle of the summer and could not accommodate additional hook-ons during this period. A new digester would allow some moderate additional usage for approximately two more years.

Roads

Of the Reservation's 56,573 acres; 2,242 acres are utilized by roads and road right-of-ways, including the 1,320 acre Blue Ridge Parkway. State and federal Highways consist of 21.8 miles with 158.55 acres of right-of-way. A separate Bureau of Indian Affairs road system contains 19.0 miles of paved roads containing 138.18 acres of right-of-way and 104.9 miles of unpaved roads with 762.9 acres of right-of-way (see Map #6).

A "Thoroughfare Plan for Cherokee, North Carolina" was developed in January 1974 by the North Carolina Department of Transportation and Highway Safety. The plan was accepted and adopted by the Tribal Council. However, funds are not readily available for construction and it may well be a matter of years before relief of the congested traffic can be expected. In 1970 and 1971, a traffic count on all 36 Bureau of Indian Affairs maintained roads was taken. The results indicate that nearly all of these roads are inadequate as shown below by the average daily traffic count (ADT) on selective dates. According to normal criteria, an average daily traffic count of 100 to 150 is adequate to require paving.



MAP 6

BUREAU OF INDIAN AFFAIRS
ROAD SYSTEM MAP

◆

CHEROKEE INDIAN RESERVATION
NORTH CAROLINA

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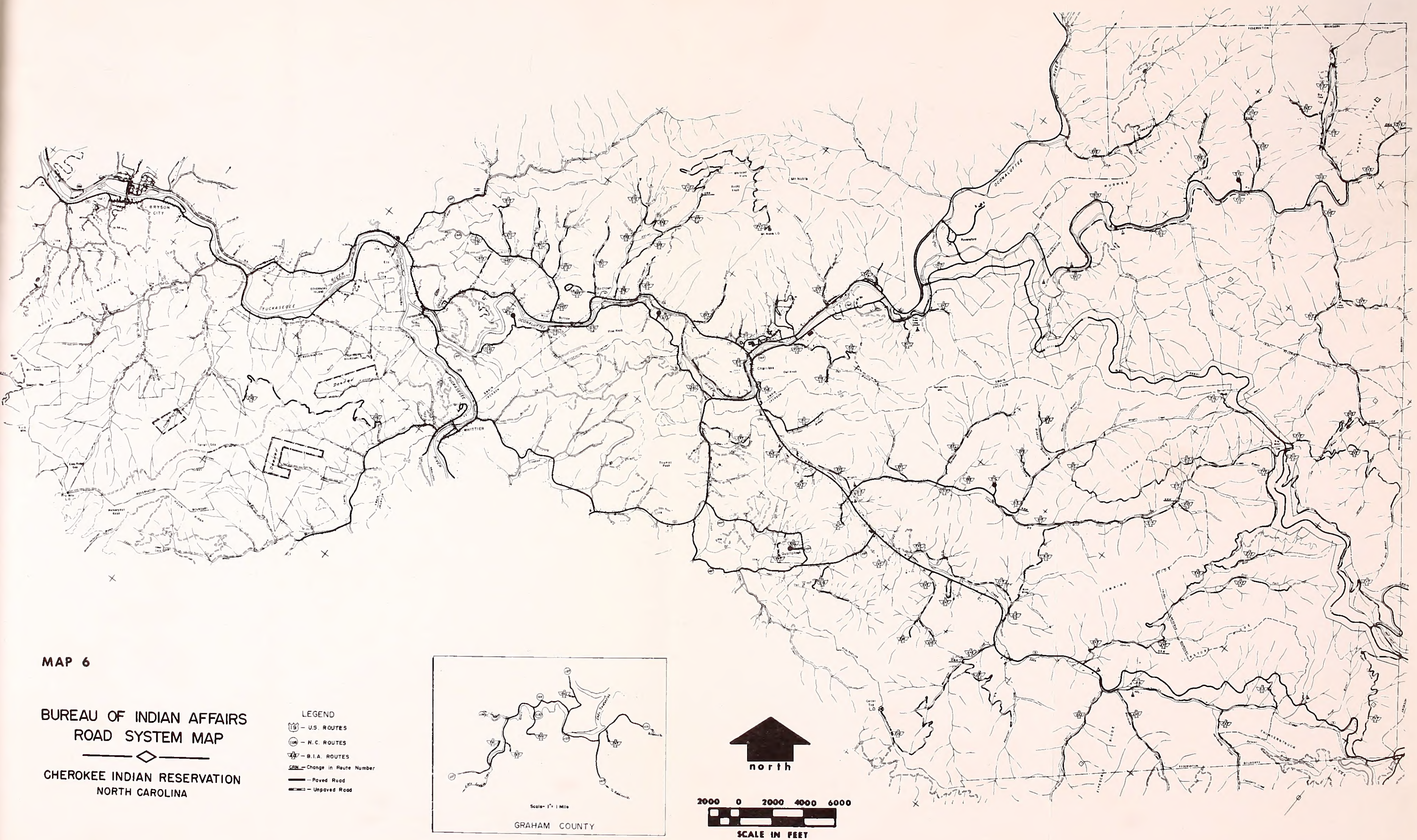
MAP 6



BUREAU OF INDIAN AFFAIRS ROAD SYSTEM MAP

◆

CHEROKEE INDIAN RESERVATION
NORTH CAROLINA

Route No.	Route Name	ADT	Date
409	Jenkins Creek	190	6-22-70
412	Soco Creek	340	6-22-70
415	McLean's Store	195	1-28-70
418	Hoot Owl Cove	140	6-23-70
1236	Old #4	709	7- 1-71
403	Straigth Fork	113	6-25-70
410	Big Cove Loop	323	5-18-71
405	Bunches Creek	313	6-29-70
404	Galamore Branch	280	6-29-70
456	Sherrill Cove	100	7- 2-70
458	Soggy Hill Creek	234	7- 2-70
1410	Big Cove	4,163	7- 6-70
423	Peavine Church	167	6- 5-70
439	Lambert Branch	180	7- 9-70
427	Owl Branch	240	6-10-70
417	Kate Lambert Branch	200	6-10-70
431	McCoy Branch	110	7-13-70
1045	Goose Creek	443	6-29-71
472	Fisher Branch	84	7-14-70
471	Locust Loop	66	7-14-70
470	Thomas (Wagon Wheel Gap Road)	185	7-20-70
473	Dewitt Owle	115	7-20-70
438	Adams Creek	393	6-29-71
474	Adams Creek Loop	254	7-23-70
477	Mt. Noble Look Out	230	7-23-70
411	Stillwell Branch	280	7-27-70
465	Rubin Taylor	160	7-28-70
463	Standing Deer	335	7-28-71
420	Old Gap	493	7- 1-70
451	Tooni Branch	75	7-31-70
426	Swimmer Branch	161	8- 4-70
414	Big Witch Creek	370	6-15-70
1414	Wrights Creek	1,418	6-24-71
449	Macedonia	150	6-18-70
422	Long Branch	106	6-18-70
408	Washington Creek	214	6-19-70

Of the Bureau of Indian Affairs road system containing 123.9 miles, the 19 miles of paved roads represents only 15 percent paved. All but three of the above roads have an average daily traffic count over the minimum requirement to justify being paved by

State of North Carolina standards.

The main highways that run through Cherokee all have an overload of traffic which moves extremely slow, often times coming to a complete stop. In the main part of Cherokee where U.S. Highway 19 and 441 run together, the average daily traffic count during the summer of 1971 was 18,700. Angle parking in the upper and lower village compounds the traffic congestion and safety hazards due to parked atuomobiles extending into the traffic lanes and by trying to move into and out of parking places.

Signs

As the number and competition of tourist oriented businesses increase, a greater demand for advertising is created. The form of advertising that gives the greatest concern is the placing of sign boards along the highway right-of-way. At the present time the permitting of these signs are controlled by the Resident's Highway Beautification Act, by Bureau of Indian Affair's regulations governing permits, and by Tribal Council Resolution. Council approval of resolution and permit form, designate maximum size of the signs and the annual rental fee to be charged to the permitee. This has been adequate control for use of advertising signs in the past, however, times are changing, and with these changes there is a definite need to revamp the criteria regulating the permitting of advertising signs.

Condition of Commercial Buildings

An inventory of the condition of the commercial buildings was taken in February of 1974 the results of this inventory revealed that 63.60 percent were either new or were of standard condition. In a second category those structures needing minor repair, there was 23.68 percent. A third category of deteriorating structures needing major repair revealed 7.90 percent and in the last category of those buildings that were dilapidated and should be removed there was 4.82 percent. It would be desirable for the Tribal Council to adopt an appearance code requiring native type materials such as stone or logs on the face of all Commercial buildings, thereby creating an aesthetic atmosphere with some uniformity.

SOILS

General Description and Origin

The origin of most soils of the Eastern Band of Cherokee Indians Reservation is either residual (in-place) or alluvial (transported).

Residual soils result from the disintegration of local rock materials occurring as a blanket on mountain slopes directly over parent rock. Soil thickness is generally less than three feet, but decomposed rock often reaches depths of fifty or more feet. Composition and properties vary with the nature of the parent rock, the degree of alteration, and the rate and degree of geologic erosion. In addition to their obvious value for plant growth, residual soils and weathered rock are an important ground water reservoir and recharge medium.

Alluvial soils are found where they were deposited by flowing water. These positions are generally on valley floors and on "benches" or "terraces" representing former valley floors. The sorting action of water has made their composition different from the residual soils from which they are derived. Alluvial soils are important aquifers for domestic wells.

Soil Classification

Soils may be studied and classified in a wide variety of intensities and located using a wide variety of map scales. The soil series is the basic unit of soil taxonomy. The term series refers to a set of soil properties which can be described with relatively small variations. Areas on the landscape which fit into these described limits can be identified in the field and located on a map or photograph using lines and symbols.

Complete surveys, showing soil series, of the counties covering the Reservation have been made and published as follows:

County	Approximate Map Scale	Date Published
Cherokee	2.6 inches = 1 mile	September 1951
Graham	1.3 inches = 1 mile	August 1953
Haywood	2.6 inches = 1 mile	January 1954
Jackson	1.3 inches = 1 mile	September 1948
Swain	1.3 inches = 1 mile	July 1947

These surveys were cooperatively prepared by the U.S.D.A., the North Carolina Agricultural Experiment Station, and the T.V.A. They are most useful to agricultural and forestry interests, but with careful interpretation they can be helpful in all types of resource planning.

For many years Standard Soil Surveys have been made on individual tracts of land to provide useful information in conservation planning. These surveys are recorded on aerial photographs at a scale of four inches = 1 mile. Scattered tracts of Reservation land have been so mapped by the Soil Conservation Service through cooperative agreements between the Bureau of Indian Affairs, local Soil and Water Conservation Districts, and individual land users. Copies of these surveys are on file in field offices of the Soil Conservation Service where technical assistance in their interpretation is available.

For purposes of this Land Use Analysis, General Soil Maps of the counties having Reservation land within their boundaries offer the most useful sources of information. The following material has been adapted from the descriptions and interpretations which were published with these maps. Colors identifying these soils associations have been placed on the Reservation base map providing a graphical reference to their location and size. Care must be taken to avoid using these generalized data for operational planning on small tracts.

GENERAL SOIL MAP

EASTERN BAND of CHEROKEE INDIANS

Soils that occur together in a characteristic and repeating pattern make up a general soil area or association. An association consists of one or more major soils and at least one minor soil. The soils may be similar or they may differ greatly. Although closely associated geographically, the soils in a general soil area may differ in their suitability for agriculatural and non farm use.

A general soil map has been made showing the location and extent of the major soil associations in each county with reservation land holdings. Such maps provide the general soils data needed to plan the efficient use and orderly development of the Reservation's land resources. The general soil map is useful to those who want a general idea of the soils, who want to compare different parts of the resevation, or who want to know the location of large areas suitable for a certain kind of farming or other broad land use. It does not show accurately the kinds of soil on a single farm or in a small tract, and is not suitable for the planning of such small units of land.

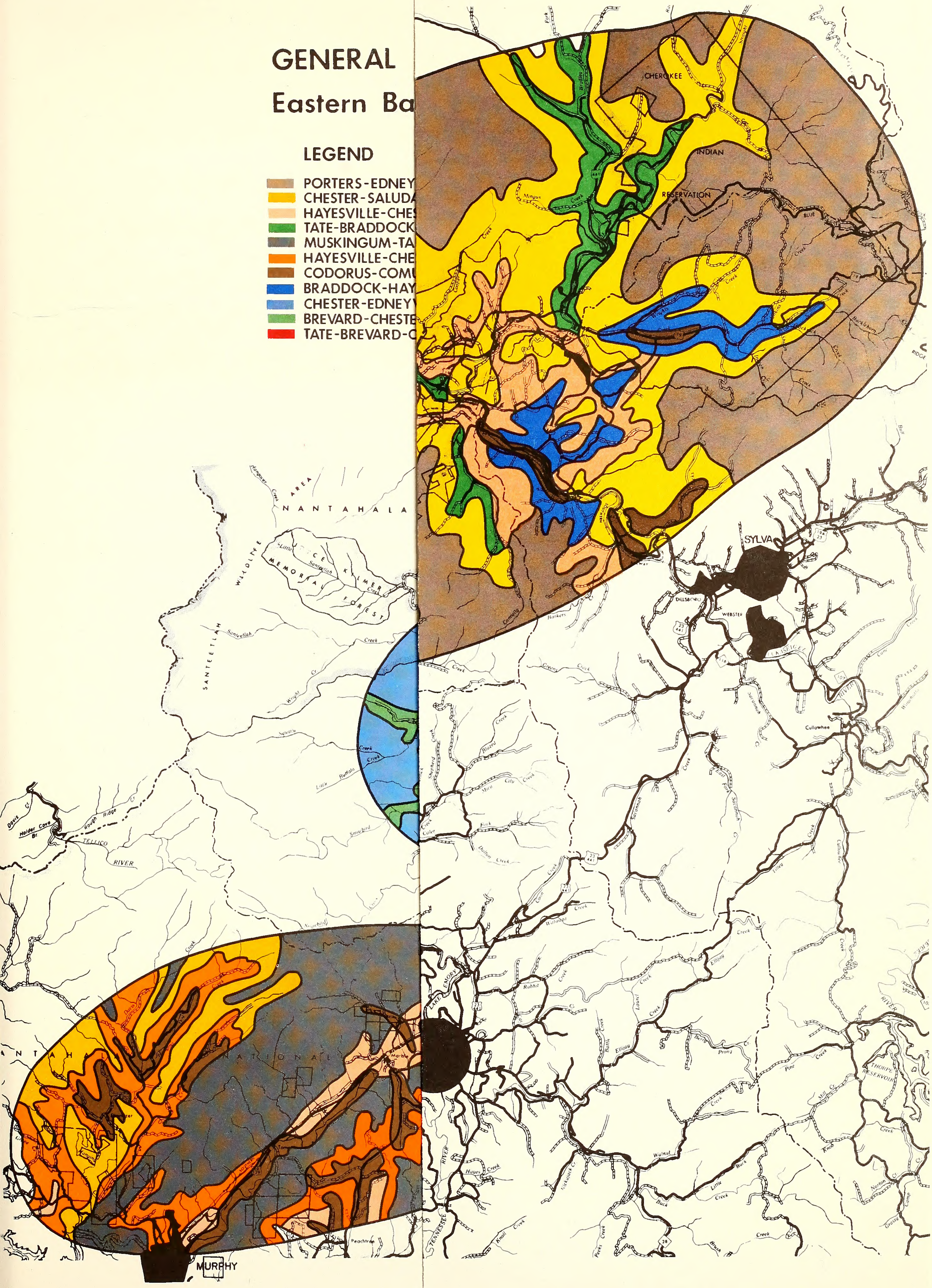
The eleven soil associations of the Cherokee Indian Reservation are described as follows:

GENERAL

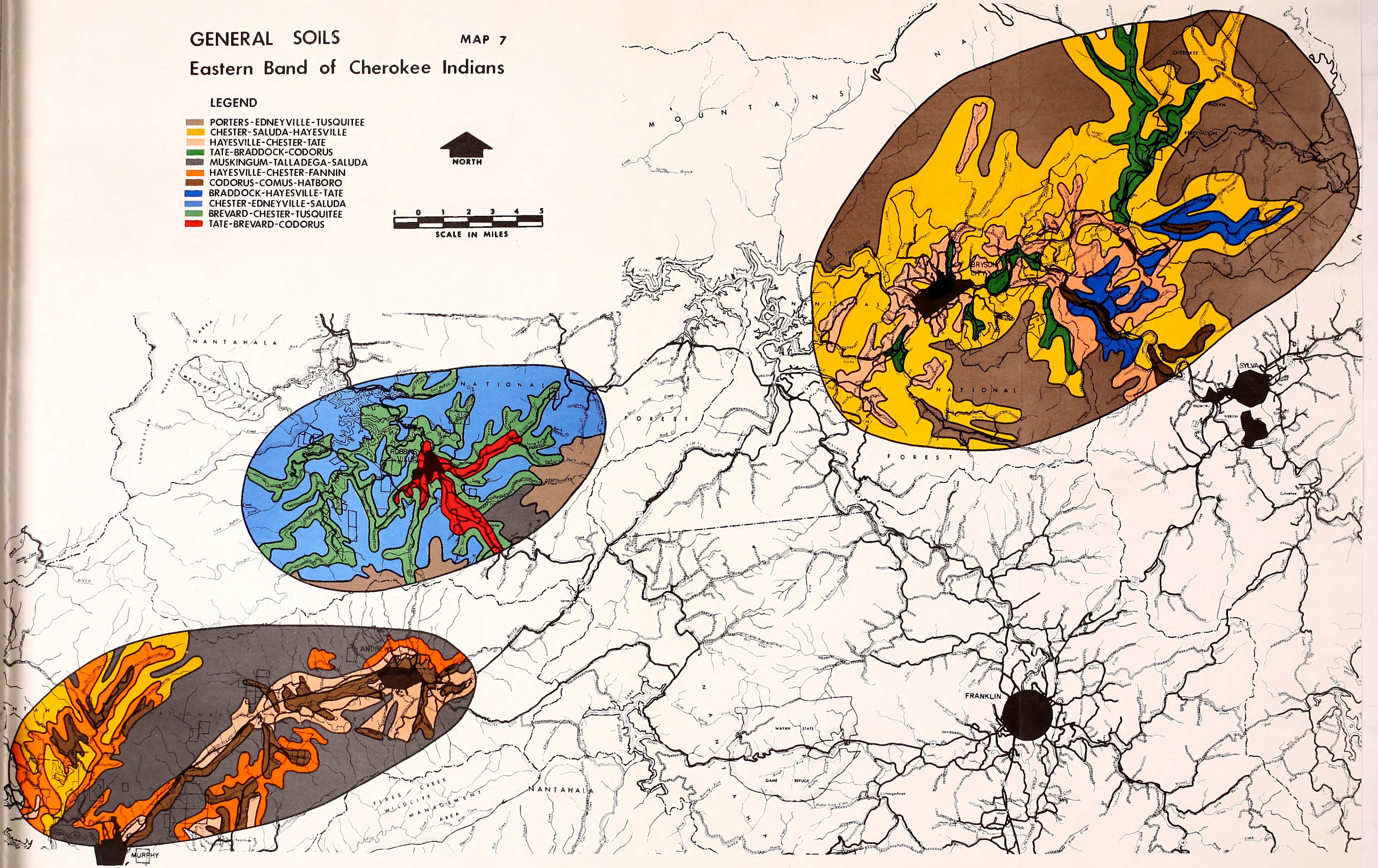
Eastern Ba

LEGEND

- ▨ PORTERS-EDNEY
- ▨ CHESTER-SALUDA
- ▨ HAYESVILLE-CHES
- ▨ TATE-BRADDOCK
- ▨ MUSKINGUM-TA
- ▨ HAYESVILLE-CHE
- ▨ CODORUS-COMU
- ▨ BRADDOCK-HAY
- ▨ CHESTER-EDNEY
- ▨ BREVARD-CHESTE
- ▨ TATE-BREVARD-C



GENERAL SOILS MAP 7
Eastern Band of Cherokee Indians



GENERAL SOIL MAP LEGEND
EASTERN BAND OF CHEROKEE INDIANS

1. CODORUS-COMUS-HATBORO ASSOCIATION: Well drained to poorly drained soils on nearly level floodplains.
2. PORTERS-EDNEYVILLE-TUSQUITEE ASSOCIATION: Well drained soils on steep and very steep mountains at elevations generally above 3,000 feet.
3. BRADDOCK-HAYESVILLE-TATE ASSOCIATION: Well drained soils on gently sloping to rolling foothills and toe slopes.
4. HAYESVILLE-CHESTER-TATE ASSOCIATION: Well drained soils on moderatley steep foothills and toe slopes.
5. CHESTER-SALUDA-HAYESVILLE ASSOCIATION: Well drained soils on steep and very steep mountains at elevations generally below 3,000 feet.
6. TATE-BRADDOCK-CODORUS ASSOCIATION: Well drained soils on sloping valley floors and somewhat poorly drained soils in stream flood plains.
7. MUSKINGUM-TALLADEGA-SALUDA ASSOCIATION: Well drained and somewhat excessively drained soils with bedrock generally at depths of 1 to 6 feet on steep and very steep mountains.
8. HAYESVILLE-CHESTER-FANNIN ASSOCIATION: Well drained soils on moderately steep foothills.
9. CHESTER-EDNEYVILLE-SALUDA ASSOCIATION: Well drained soils on steep and very steep mountains at elevations generally below

3,000 feet.

10. CHESTER-BREVARD-TUSQUITEE ASSOCIATION: Well drained soils on moderately steep toe slopes and foothills.

11. TATE-BREVARD-CODORUS ASSOCIATION: Well drained soils on sloping valley floors and somewhat poorly drained soils in stream floodplains.

1. CODORUS-COMUS-HATBORO ASSOCIATION

Well drained to poorly drained soils on nearly level floodplains.

This association is located mainly along larger streams. The association is characterized by narrow, nearly level stream floodplains which are subject to occasional or frequent flooding of short duration. These soils have been formed from alluvial deposits.

About 90 percent of the land in this association has been cleared for farming. These soils are capable of high production and intensive agricultural use when artificial drainage measures have been installed where needed. They are generally not suitable for residential or industrial development because of the flood hazard. Depth to the water table and flooding are the chief hazards limiting the use of the soils in this association.

The Codorus soils are moderately well to somewhat poorly drained with the seasonable high water table at 1 to 2 feet below the surface. Codorus soils commonly occur along the wider first bottoms in slightly depressed positions adjacent to the surrounding uplands. Along the smaller first bottoms they frequently occupy the whole floodplain. These soils have dark grayish brown, loamy surfaces and grayish brown loamy subsoils. They are usually underlain by sand and gravel strata at depths of 3 to 5 feet.

The Comus soils are well drained soils with the seasonally high water table generally 3 feet or more below the surface. They commonly occur along the wider first bottoms in slightly elevated positions adjacent to the stream. Comus soils have dark brown or brown loamy surfaces and yellowish brown, loamy subsoils. They are usually underlain by sand and gravel strata at depths of 3 to 5 feet.

The Hatboro soils are poorly drained soils with the seasonally high water table at or near the surface. They commonly occur in depressions or pockets of the first bottoms. Hatboro soils have dark gray loamy surfaces and gray loamy subsoils. They are usually underlain by sand and gravel strata at depths of 2 to 4 feet.

Minor soils include the very poorly drained Toxaway soils which have thick dark surfaces and gray subsoils, the well drained Rosman soils which have thick dark surfaces and yellowish brown subsoils, the somewhat poorly drained Warne soils which have gray clayey subsoils and are in low terrace positions, and the well drained Tate soils which occur in positions slightly above the floodplain.

2. PORTERS-EDNEYVILLE-TUSQUITEE ASSOCIATION

Well drained soils on steep and very steep mountains at elevations generally above 3,000 feet.

This association is located on higher mountains. The area is characterized by narrow ridge tops with steep and very steep side slopes and steep coves. Slopes are mostly in the range of 25 to 60 percent. Because of the cool moist climate where these soils occur they are seldom dry and are relatively high in organic matter.

Nearly all of the land in this association is in forest. Some of the more common trees growing on these soils are yellow poplar, oak, hemlock, birch, white and pitch pine with an understory of rhododendron. The soils in this association have a high to very high productivity potential for trees. When managed for timber production they have a moderate to severe problem because of equipment restrictions due to steep slopes and in places, surface stones. Steep slopes make these soils unsuitable for cultivation and moderately suited to pasture use on the milder slopes. Steep slopes, surface stones and depth to hard rock are also hazards in developing these soils for nonagricultural uses. Steepness of slopes is the major factor contributing to extremely high erodibility of these soils when their plant cover is destroyed or removed.

Porter soils are moderately deep, well drained soils occurring generally on north and east facing slopes. They have very dark brown loamy surfaces, containing few too many stones, and dark yellowish brown clay loam subsoils. Porters soils have formed from the weathering of gneiss rocks and are underlain by hard rock at depths of 2 to 6 feet.

Edneyville soils are well drained, moderately deep soils, occurring on south and west facing slopes and narrow ridges. They have dark grayish brown sandy loam surfaces, and yellowish brown sandy clay loam subsoils. Edneyville soils are formed from the weathering of granite and gneiss rocks and are underlain by hard rock at depths of 4 to 10 feet.

Tusquitee soils, are deep, well drained soils occurring in coves and on toe slopes. They have thick, very dark brown loam surfaces and dark yellowish brown, clay loam subsoils. Tusquitee soils have formed from soil material which accumulated from the adjoining slopes. They may contain a high percentage of stones and boulders although depth to bedrock is 6 to 20 feet or more.

Minor soils include the droughty Ashe soils which occur on narrow ridges and rough side slopes with south and west aspects, the high micaceous Watauga soils, and areas of shallow stony soils on the roughest and steepest side slopes and a few small areas of rock outcrops.

3. BRADDOCK-HAYESVILLE-TATE ASSOCIATION: Well drained soils on gently sloping to rolling stream terraces, foothills and toe slopes.

This association is located on the smoother sloping foothills and toe slopes which occur generally along the valley floors of major streams. This association is characterized by broad smooth benches, ridges and toe slopes. Slopes are generally in the range of 2 to 10 percent.

Over half of the land in this association has been cleared. Most of the cleared areas are being used for pasture or hay. The remainder is either idle or being used for residential development with a small percent in row crops. On the forested areas some of the more common trees are oaks, shortleaf pines with a scattering of yellow poplars, white pines, Virginia pines and red maples. These are good agricultural soils. Slopes are a slight to moderate limitation in using them for row crops. They are well suited for pasture use.

The soils in this association have a high productivity potential for trees and only a slight equipment restriction due to slopes. They have a slight to moderate limitation for most non-agricultural uses. Slope is the major hazard in limiting the use of these soils. Erosion, while not the hazard generally found on steeper slopes, is none-the-less a major concern in using the soils of this association. Their location and relatively smooth topography make them attractive for many types of "development", much of which requires land grading. Under these conditions, erosion is a significant hazard.

Braddock soils are very deep, well drained soils occurring on elevated stream terraces. They have reddish brown loam surfaces and red clayey subsoils and are formed from old alluvial deposits. Braddock soils are underlain by bedrock at depths of more than 10 feet.

Hayesville soils are deep weathered soils occurring in foothill positions. They have reddish brown loamy surfaces and red clayey subsoils and are formed from the weathering of granite gneiss rocks. They are underlain by bedrock at 4 to 10 feet or more.

Tate soils occur in toe slope and stream terrace positions. Tate soils are deep, well drained, and have brown loamy surfaces and yellowish brown clay loam subsoils. They are formed from soil material which was deposited from the adjoining slopes and from old stream deposits. Depth to bedrock is 6 to 20 feet or more.

Minor soils include the moderately well drained Delanco soils which occur on lower toe slopes, and the somewhat poorly drained Codorus soils which occur in narrow floodplains adjacent to the small streams which dissect this association.

4. HAYESVILLE-CHESTER-TATE ASSOCIATION

Well drained soils on moderately steep foothills and toe slopes.

This association is located mainly along the valleys made by foothills with smooth ridge tops and moderately steep side slopes and moderately steep toe slopes at the base of steep mountains at elevations below 3,000 feet. Slopes are mostly in the range of 10 to 25 percent.

About 40 percent of this soil has been cleared for farming with most of this being in pasture or hayland use. Some of the more common trees on the forested areas are oak, hickory, red maple, shortleaf and Virginia pine and a scattering of yellow poplar in places. There is a moderate to severe erosion hazard in using these soils for cultivated crops, or for other uses which change their slope or change their plant cover. They are well suited to pasture use. They have a high productivity potential for trees. When managed for timber production they have a slight to moderate problem because of equipment restrictions due to moderately steep slopes. Moderately steep slopes are the chief limitation in using these soils for most nonagricultural uses.

Hayesville soils are deep well drained soils occurring on smooth foothills. They have reddish brown loam surfaces and red clayey subsoils and are formed from the weathering of granite and gneiss rocks. They are underlain by bedrock at depths of 4 to 10 feet or more.

Chester soils are moderately deep, well drained soils occurring in foothill positions. They have dark brown loamy surfaces and yellowish red clay loam subsoils. Chester soils are formed from the weathering of granite and gneiss rocks and are underlain by bedrock at a depth of 4 to 10 feet.

Tate soils occur in toe slope positions. They are deep, well drained and have brown loamy surfaces and yellowish brown clay loam subsoils. They are formed from soil material which was deposited from the adjoining steep slopes. Depth to bedrock is 6 to 20 feet or more.

Minor soils include the red micaceous Fannin soils, the dark yellowish brown Tusquitee soils and the yellowish red clayey Clifton soils.

5. CHESTER-SALUDA-HAYESVILLE ASSOCIATION

Well drained soils on steep and very steep mountains at elevations generally below 3,000 feet.

This association occupies lower slopes of several of the reservation's larger mountains. It is characterized by mountains with narrow ridge tops and steep and very steep side slopes. Slopes are generally in the range of 25 to 60 percent.

Most of the land in this association is in forest. A few small areas have been cleared and are being used for pastures. Some of the more common trees growing on these soils are oak, hickory, shortleaf and pitch pine. The understory includes laurel, rhododendron, sourwood and dogwood. Because of steep slopes, and in places surface stones, they are not suited to cultivated crops and are moderately suited to pastures on the milder slopes. The soils in this association have a high productivity potential for tree growth. When managed for timber production they have a moderate to severe problem because of equipment restrictions due to steep slopes, and in places surface stones. Steep slopes are the major hazard in using these soils for most nonagricultural uses. Slope steepness and, in some places, shallow depth to hard rock contribute to very high potential for erosion on these soils when their plant cover is destroyed or removed.

The Chester soils are moderately deep, well drained soils with dark brown loamy surfaces and yellowish red clay loam subsoils. They are formed from the weathering of gneiss and granite rocks and are underlain by hard rocks at depth of 4 to 10 feet.

Saluda soils are generally located on the more uneven side slopes and narrowest ridges. They have dark brown loamy surfaces and thin yellowish red sandy clay loam subsoils. They are formed from the weathering of granite and gneiss rocks and are underlain by hard rock at depths of 2½ to 6 feet.

Hayesville soils are located on the broader ridges and smoother side slopes in the association. They are deep, well drained soils with reddish brown loamy surfaces and red clayey subsoils. Hayesville soils are formed from the weathering of granite and gneiss rocks and are underlain by hard rock at depths of 4 to 10 feet or more.

Minor soils include the deep, well drained, red Brevard soils which occur on toe slopes, the deep, well drained yellowish brown Tusquitee soils, which occur in cove positions and the moderately deep, well drained, yellowish brown Edneyville soils, which occur in places on some of the narrow ridges and steep side slopes.

6. TATE-BRADDOCK-CODORUS ASSOCIATION

Well drained soils on sloping valley floors and somewhat poorly drained soils in stream floodplains.

This association is located in several of the reservation's larger valleys. These areas are characterized by broad, smooth sloping valley floors with fairly narrow floodplains. Slopes are in the range of 2 to 10 percent, except in the floodplains where they are less than 2 percent.

Over one-half of the land in this association has been cleared and is being used for general farming or residential and commercial purposes. These are good agricultural soils. There is a slight to moderate erosion hazard in using them for cultivated crops. Flooding and seasonally high water tables are slight to moderate hazards in the floodplains. Slopes are a slight hazard in developing these soils for most nonagricultural uses except in the stream floodplains where high water tables and flooding are severe hazards.

The Tate soils occur on toe slopes and in stream terrace positions. They are deep, well drained soils with brown loamy surfaces and yellowish brown clay loam subsoils. Tate soils are formed from soil material which was deposited from the adjoining slopes, and by old alluvial deposits. Depth to bedrock is 6 to 20 feet or more.

Erosion, while not the hazard, generally found on steeper slopes, is none-the-less a major concern in using the soils of this association. Their location and relatively smooth topography make them attractive for many types of "development", much of which requires land grading. Under these conditions, erosion is a significant hazard.

Braddock soils are deep, well drained soils occurring in bench or stream terrace positions. These soils have brown loamy surfaces and red clayey subsoils. Braddock soils have formed from old alluvial deposits. Depth to bedrock is generally 6 to 20 feet or more.

Codorus soils occur on nearly level slopes along stream floodplains, and are subject to occasional flooding of short duration. These soils have dark grayish brown, loamy surfaces and grayish brown to gray, loamy surfaces and grayish brown to gray, loamy subsoils. Gravel, cobble and sand strata occur usually at depths of 2 to 4 feet. In an undrained condition the seasonally high water table is within a foot of the surface.

Minor soils include the well drained Comus soils which occur in slightly elevated positions of the floodplain, the poorly drained Hatboro soils which occur in low pockets of the floodplain and in some places steeper slopes of Chester and Hayesville soils.

7. MUSKINGUM-TALLADEGA-SALUDA ASSOCIATION

Well drained and somewhat excessively drained soils with bedrock generally at depths of 1 to 6 feet, on steep and very steep mountains.

This association is located generally in areas where shale stone and schists predominate. Such areas are characterized by narrow ridges and rough, steep and very steep side slopes. Slopes are mostly in the range of 35 to 70 percent.

Nearly all of the land in this association is in forest. Some of the more common trees growing on these soils are oak, hickory, shortleaf, pitch and Virginia pines. The understory includes laurel, rhododendron and sourwood. Because of steep slopes, droughtiness, and erosiveness of some of these soils, they are not suited to cultivation and are generally poorly suited to pastures. The soils in this association have a moderate to high productivity potential for tree growth. When managed for timber production they have a moderate to severe problem because of equipment restrictions due to steep slopes, surface stones and shallow depths to hard rock.

Steep slopes and shallow depths to hard rock are severe hazards in developing these soils for most nonagricultural uses. Slope steepness and shallow depth to hard rock contribute to extremely high erosion hazards on these soils when their plant cover is destroyed or removed.

The Muskingum soils are somewhat excessively drained soils with dark brown loamy surfaces and yellowish brown loamy subsoils. They contain many shaley fragments on the surface and throughout the soil. These soils have formed from the weathering of shale and schist rocks. They are underlain by hard, but fractured rock, at depths of 1 to 4 feet.

The Talladega soils are well drained soils with dark brown silt loam surfaces and yellowish red silty clay loam subsoils which contain a high percent of schist and shale fragments. Talladega soils are formed from the weathering of schist and shale rocks. They are underlain by hard rock at depths of 1 to 4 feet.

Saluda soils are well drained, shallow soils, with dark brown loamy surfaces and thin yellowish red sandy clay loam subsoils. They are formed from the weathering of granite and gneiss rocks and are underlain by hard rock at depths of 2½ to 6 feet.

Minor soils include the moderately deep Chester and Edneyville soils which occupy some of the smoother slopes, the deep Tusquitee soils which occur in narrow coves and foot slopes and small areas of shallow soils with many rock outcrops which occur on the steepest and roughest slopes.

8. HAYESVILLE-CHESTER-FANNIN ASSOCIATION

Well drained soils on moderately steep foothills.

This association occurs on moderately steep foothills and in some valleys. These areas are characterized by foothills with smooth ridges and moderately steep side slopes or moderately steep narrow valley floors. Slopes are mostly in the range of 10 to 25 percent.

Almost one half of this association has been cleared for farming. Most of the cleared areas are in pasture. Some of the more common trees on the forested areas are oak, yellow poplar, shortleaf pine and white pine. There is a moderate to severe erosion hazard in using these soils for cultivated crops or for other uses which change their slope or remove their plant cover. Except where surface stones are present they are well suited to pasture use. They have a high productivity potential for trees. When managed for timber production they have a slight to moderate problem because of equipment restrictions due to moderately steep slopes. Moderately steep slopes are the chief limitation in using these soils for most nonagricultural uses.

Hayesville soils are deep, well drained soils occurring on smooth foothills. They have reddish brown loam surfaces and red clayey subsoils. Hayesville soils are formed from the weathering of granite and gneiss rocks and are underlain by hard rock at depths of 4 to 10 feet or more.

Chester soils are moderately deep, well drained soils occurring in foothill positions. They have dark brown loamy surfaces and yellowish red clay loam subsoils. Chester soils are formed from the weathering of granite and gneiss rocks and are underlain by hard rock at a depth of 4 to 10 feet.

Fannin soils are moderately deep, well drained soils occurring on the foothills of a small area south of Murphy. They have brown loamy surfaces and yellowish red, micaceous clay loam subsoils. Fannin soils are formed from the weathering of highly micaceous gneiss and schist rocks. Depth to hard rock is 4 to 10 feet or more.

Minor soils include the deep, well drained red Brevard soils which occur in toe slope positions, the well drained, dark colored Tusquitee soils which occur in narrow coves, the shallow Talladega soils which occur on some ridges and the somewhat poorly drained Codorus soils which occur as narrow floodplains adjacent to the small streams which dissect this association.

9. CHESTER-EDNEYVILLE-SALUDA ASSOCIATION

Well drained soils on steep and very steep mountains at elevations generally below 3,000 feet.

This association is located on mountains at lower elevations which occur throughout much of the area. This association is characterized by mountains with narrow ridges and steep and very steep side slopes and narrow drainage ways. Slopes generally range from 25 to 60 percent.

Most of the land in this association is in forest. A few small areas have been cleared and are being used for pasture or are idle. Some of the more common trees growing on these soils are oak, hickory, shortleaf, pitch and white pines with an understory of laurel and rhododendron in many places. The soils in this association have a high productivity potential for tree growth. When managed for timber production they have a moderate to severe problem because of equipment restrictions due to steep slopes and in places, surface stones. Because of steep slopes and a severe erosion hazard, they are not suited to cultivated crops and are moderately suited to pastures on the milder slopes. Steep slopes are the major hazard in using these soils for most nonagricultural uses. Slope steepness and, in some places, shallow depth to hard rock contribute to very high potential for erosion on these soils when their plant cover is destroyed or removed.

Chester soils are moderately deep soils with dark brown loamy surfaces and yellowish red clay loam subsoils. They are formed from the weathering of gneiss and granite rocks and are underlain by hard rock at depths of 4 to 10 feet.

Edneysville soils are well drained, moderately deep soils with dark grayish brown sandy loam surfaces and yellowish brown sandy clay loam subsoils. They are formed from the weathering of granite and gneiss rocks and are underlain by hard rock at depths of 4 to 10 feet.

Saluda soils are generally located on the more broken side slopes and narrower ridges in the association. They are shallow, well drained soils with dark brown loamy surfaces and thin yellowish red sandy clay loam subsoils. Saluda soils are formed from the weathering of gneiss and granite rocks and are underlain by hard rock at depths of 2½ to 6 feet.

Minor soils include the deep well drained red Brevard soils which occur on toe slopes, the deep well drained, yellowish brown Tusquitee soils, which occur in cove positions, and the shallow Muskingum soils which occur in areas in which shale stone dominates.

10. BREVARD-CHESTER-TUSQUITEE ASSOCIATION

Well drained soils on moderately steep toe slopes and foothills.

This association is located in the coves and on toe slopes and smoother foothills. The area is characterized by moderately steeply sloping valley floors with small streams dissecting them, and foothills with narrow ridges and moderately steep side slopes. Slopes are mostly in the range of 10 to 25 percent.

Over one-half of the land in this association has been cleared for farming. Of the cleared area about one-fourth is used for cultivated crops with the remainder in pasture. Some of the more common trees on the forested areas are oak, red maple, yellow poplar and white and shortleaf pines. These soils have a high to very high productivity potential for trees. When managed for timber production they have a slight to moderate problem because of equipment restrictions due to moderately steep slopes, and in places surface stones. There is a moderate to severe erosion hazard in using these soils for cultivated crops. Moderately steep slopes are the chief hazard in using these soils for most nonagricultural uses. Slope steepness is the major factor contributing to moderately high erodibility of these soils when their plant cover is destroyed or removed.

Brevard soils occur in toe slope position along valley floors. They are deep, well drained soils with brown, loam surfaces and red clay loam subsoils. Brevard soils have formed from soil material which accumulated from the adjoining slopes. Depth to bedrock is generally 6 to 20 feet or more.

Chester soils are moderately deep, well drained soils occurring on foothills. These soils have brown loamy surfaces and yellowish red clay loam subsoils. Chester soils are formed from the weathering of gneiss and granite rocks and are underlain by hard rock at depth's of 4 to 10 feet.

Tusquitee soils are deep, well drained soils which occur in cove positions. They have thick, very dark brown, loam surfaces and dark yellowish brown, clay loam subsoils. Tusquitee soils have formed from soil materials which accumulated from the adjoining slopes. These soils may contain a high percentage of stones and boulders although depth to bedrock is 6 to 20 feet or more.

Minor soils include the deep, red, clayey Hayesville soils, which occur in foothill positions, the deep, yellowish brown Tate soils, which occur on some of the lower toe slopes and the somewhat poorly drained Codorus soils which occur in the narrow floodplains which dissect this association in some places.

11. TATE-BREVARD-CODORUS ASSOCIATION

Well drained soils on sloping valley floors and somewhat poorly drained soils in stream floodplains.

This association is located in larger valleys. These areas are characterized by broad, smooth sloping valley floors with fairly narrow floodplains. Slopes are in the range of 2 to 10 percent, except in the floodplains where they are less than 2 percent.

Almost all of the land in this association has been cleared and is being used for general farming or residential and commercial purposes. They are good agricultural soils. There is a slight to moderate erosion hazard in using them for row crops. Flooding and seasonally high water tables are slight to moderate hazards in developing these soils for most nonagricultural uses except in the stream floodplains where high water tables and flooding are severe hazards. Erosion, while not the hazard generally found on steeper slopes, is none-the-less a major concern in using the soils of this association. Their location and relatively smooth topography make them attractive for many types of "development", much of which requires land grading. Under these conditions, erosion is a significant hazard.

The Tate soils occur in toe slopes and stream terrace positions. These are deep, well drained soils with brown loamy surfaces and yellowish brown clay loam subsoils. Tate soils are formed from soil material which was deposited from the adjoining slopes, and by old alluvial deposits. Depth to bedrock is 6 to 20 feet or more.

Brevard soils are deep, well drained soils occurring in toe slope positions. These soils have brown loamy surfaces and red clay loam subsoils. Brevard soils have formed from soil material which accumulated from the adjoining slopes. Depth to bedrock is generally 6 to 20 feet or more.

Codorus soils occur on nearly level slopes along stream floodplains, and are subject to occasional flooding of short duration.

These soils have dark grayish brown, loamy surfaces and grayish brown to gray, loamy surfaces and grayish brown to gray, loamy subsoils. Gravel, cobble and sand strata usually occur at depths of 2 to 4 feet. In an undrained condition the seasonally high water table is within a foot of the surface.

Minor soils include the deep red, clayey Braddock soils which occur in high terrace positions, the well drained Comus soils which occur in slightly elevated positions of the floodplain and the poorly drained Hatboro soils, which occur in low pockets of the floodplains.

SOURCE: U. S. Department of Agriculture
Soil Conservation Service
Andrews, North Carolina

SOIL INTERPRETATIONS

GENERAL SOIL MAP

Eastern Band of Cherokee Indians

1970

Soil Limitations

1. Soil Association: Codorus-Comus-Hatboro
   0 - 2% Slope Range

Septic Tank Filter Fields
a. Codorus - Sev., Fl, Wt
b. Comus - Sev., Fl
c. Hatboro - Sev., Fl, Wt

Camp Sites
a. Codorus - Sev., Fl, Wt
b. Comus - Sev., Fl
c. Hatboro - Sev., Fl, Wt

Picnic Areas
a. Codorus - Mod, Fl, Wt
b. Comus - Mod., Fl
c. Hatboro - Sev., Fl, Wt

Intensive Play Areas
a. Codorus - Mod., Fl, Wt
b. Comus - Mod., Fl
c. Hatboro - Sev., Fl, Wt

Light Industries (whose footings are in subsoil)
a. Codorus - Sev., Fl, Wt
b. Comus - Sev., Fl
c. Hatboro - Sev., Fl, Wt

Roads and Streets (that have subsoil for base)
a. Codorus - Sev., Fl, Wt
b. Comus - Sev., Fl
c. Hatboro - Sev., Fl, Wt

Suitability for Agriculture
a. Codorus - Good
b. Comus - Good
c. Hatboro - Fair

Suitability for Woods - Good

2. Soil Association: Porters-Edneyville-Tusquitee
25 - 60% Slope Range

Septic Tank Filter Fields
a. Porters - Sev., Sl, R
b. Edneyville - Sev., Sl

Camp Sites
Sev., Sl

Picnic Areas
Sev., Sl

Intensive Play Areas
a. Porters - Sev., Sl, R
b. Edneyville - Sev., Sl

Light Industry (whose footings are in subsoil)
a. Porters - Sev., Sl, R
b. Edneyville - Sev., Sl

Roads and Streets (that have subsoil for base)
a. Porters - Sev., Sl, R
b. Edneyville - Sev., Sl

Suitability for General Agriculture
Poor

Suitability for Woods
Good

3. Soil Association: Braddock-Hayesville-Tate
2 - 10% Slope Range

Septic Tank Filter Fields
None to Slt.

Camp Sites
Slt. to Mod., Sl

Picnic Areas
None to Slt.

Intensive Play Areas
Slt. to Mod., Sl

Light Industries (whose footings are in subsoil)
Slt. to Mod., Sl

Roads and Streets (that have subsoil for base)
None to Slt.

Suitability for General Agriculture
Good

Suitability for Woods
Good

4. Soil Association: Hayesville-Chester-Tate
10 - 25% Slope Range

Septic Tank Filter Fields
Mod. to Sev., Sl

Camp Sites
Sev., Sl

Picnic Areas
Mod., Sl

Intensive Play Areas
Sev., Sl

Light Industries (whose footings are in subsoil)
Sev., Sl

Roads and Streets (that have subsoil for base)
Mod., Sl

Suitability for General Agriculture
Fair

Suitability for Woods
Good

5. Soil Association: Chester-Saluda-Hayesville
25 - 60% Slope Range

Septic Tank Filter Fields
a. Chester - Sev., Sl
b. Saluda - Sev., Sl, R
c. Hayesville - Sev., Sl

Camp Sites
Sev., Sl

Picnic Areas
Sev., Sl.

Intensive Play Areas
a. Chester - Sev., Sl
b. Saluda - Sev., Sl, R
c. Hayesville - Sev., Sl

Light Industries (whose footings are in subsoil)
a. Chester - Sev., Sl
b. Saluda - Sev., Sl, R
c. Hayesville - Sev., Sl

Roads and Streets (that have subsoil for base)
a. Chester - Sev., Sl
b. Saluda - Sev., Sl, R
c. Hayesville - Sev., Sl

Suitability for General Agriculture
Poor

Suitability for Woods
a. Chester - Good
b. Saluda - Fair
c. Hayesville - Good

6. Soil Association: Tate-Braddock-Codorus
2-10% Slope Range (Tate-Braddock)
0-2% Slope Rande (Codorus)

Septic Tank Filter Fields
a. Tate - None to Slt.
b. Braddock - None to Slt.
c. Codorus - Sev., Fl, Wt

Camp Sites
a. Tate - Slt., to Mod., Sl
b. Braddock - Slt. to Mod., Sl.
c. Codorus - Sav., Fl, Wt.

Picnic Areas
a. Tate - None to Slt
b. Braddock - None to Slt
c. Codorus - Sev., Fl, Wt

Intensive Play Areas
a. Tate - Slt. to Mod., Sl
b. Braddock - Slt. to Mod., Sl
c. Codorus - Mod., Fl, Wt

Light Industrial (whose footings are in subsoil)
a. Tate - Slt. to Mod., Sl
b. Braddock - Slt. to Mod., Sl
c. Codorus - Sev., Fl, Wt

Roads and Streets (that have subsoils for base)
a. Tate - None to Slt.
b. Braddock - None to Slt.
c. Codorus - Sev., Fl, Wt

Suitability for General Agriculture
Good

Suitability for Woods
Good

7. Soil Association: Muskingum-Talladega-Saluda
35 - 70% Slope Range

Septic Tank Filter Fields
Severe, Sl, R

Camp Sites
Severe, Sl

Picnic Areas
Severe, Sl

Intensive Play Areas
Severe, Sl

Light Industries (whose footings are in subsoil)
Severe, Sl, R

Roads and Streets (that have subsoil for base)
Severe, Sl, R

Suitability for General Agriculture
Poor

Suitability for Woods
Fair

8. Soil Association: Hayesville-Chester-Fannin
10 - 25% Slope Range

Septic Tank Filter Fields
Moderate to Severe, Sl

Camp Sites
Severe, Sl

Picnic Areas
Moderate, Sl

Intensive Play Areas
Severe, Sl

Light Industries (whose footings are in subsoil)
Severe, Sl

Roads and Streets (that have subsoil for base)
Moderate, Sl

Suitability for General Agriculture
Fair

Suitability for Woods
Good

9. Soil Association: Chester-Edneyville-Saluda
25 - 60% Slope Range

Septic Tank Filter Fields
a. Chester - Severe, Sl
b. Edneyville - Severe, Sl
c. Saluda - Severe, Sl, R

Camp Sites
Severe, S1

Picnic Areas
Severe, S1

Intensive Play Areas
Severe, S1

Light Industries (whose footings are in subsoil)
Severe, S1

Roads and Streets (that have subsoil for base)
Severe, S1

Suitability for General Agriculture
Poor

Suitability for Woods
Good

10. Soil Associations: Brevard-Chester-Tusquitee
10 - 25% Slope Range

Septic Tank Filter Fields
Moderate to Severe, S1

Camp Sites
Severe, S1

Picnic Areas
Moderate, S1

Intensive Play Areas
Severe, S1

Light Industries (whose footings are in subsoil)
Severe, S1

Roads and Streets (that have subsoil for base)
Moderate, S1

Suitability for General Agriculture
Fair

Suitability for Woods - Good

11. Soil Association: Tate-Brevard-Codorus
2-10% Slope Range (Tate-Brevard)
0-2% Slope Range (Codorus)

Septic Tank Filter Fields
a. Tate - None to Slight
b. Brevard - None to Slight
c. Codorus - Severe, Fl, Wt

Camp Sites
a. Tate - Slight to Moderate, Sl
b. Brevard - Slight to Moderate, Sl
c. Codorus - Severe, Fl, Wt

Picnic Areas
a. Tate - None to Slight
b. Brevard - None to Slight
c. Codorus - Severe, Fl, WT

Intensive Play Areas
a. Tate - Slight to Moderate, Sl
b. Brevard - Slight to Moderate, Sl
c. Codorus - Moderate, Fl, Wt

Light Industries (whose footings are in subsoil)
a. Tate - Slight to Moderate, Sl
b. Brevard - Slight to Moderate, Sl
c. Codorus - Severe, Fl, Wt

Roads and Streets (that have subsoil for base)
a. Tate - None to Slight
b. Brevared - None to Slight
c. Codorus - Severe, Fl, Wt

Suitability for General Agriculture
Good

Suitability for Woods
Good

Abbreviations for Limiting Factors:

Fl = Flood hazard
Wt = Water Table
Traf = Trafficability
Sh-Sw = Shrink-swell potential
R = Rock
Perc = Percolation rate
Cor = Corrosion potential
TSC = Traffic Supporting Capacity
Prod - Productivity
AWC = Available water capacity
Sl = Slope

Abbreviations for Degree of Limitation:

Slt. = Slight
Mod. = Moderate
Sev. = Severe

Septic Tank Filter Fields

Slopes > 10%
Impose limitations; 10-
15% - Mod;
15%+ - Sev.

Camp Sites

Slopes > 6% impose limitations
6 - 10% - Mod.
10%+ = Sev.

Picnic Areas

Slopes > 10% impose limitations
10-25 % = Mod.
25%+ = Sev.

Intensive Play Areas

Slopes > 6% impose limitations
6 - 10% = Mod.
10%+ = Sev.

Light Industries

Slopes > 10% impose Sev. limitations

Roads and Streets

Slopes > 25% impose sev. limitations

SOURCE: U.S. Department of Agriculture, Soil Conservation Service

THE FOREST
OF THE
EASTERN BAND OF CHEROKEE INDIANS
QUALLA BOUNDARY AND 3,200 ACRE TRACT

(Extractions From, "An Opportunity
in Forest Development for the
Eastern Band of Cherokee Indians";
by Hammon, Jensen & Wallen;
Oakland, California; 1963)

THE CHEROKEE FOREST - ITS DESCRIPTION

The Cherokee forest, when viewed in detail, is a complex of many things. Historical and recent fires, timber cutting and land clearing, together with the natural habitat factors that influence tree growth, have all played their parts in the development of what now exists. It is to reduce this existing complex into meaningful parts which will lend themselves to evaluation and development planning of the resource that the Timber Stand Map was made.

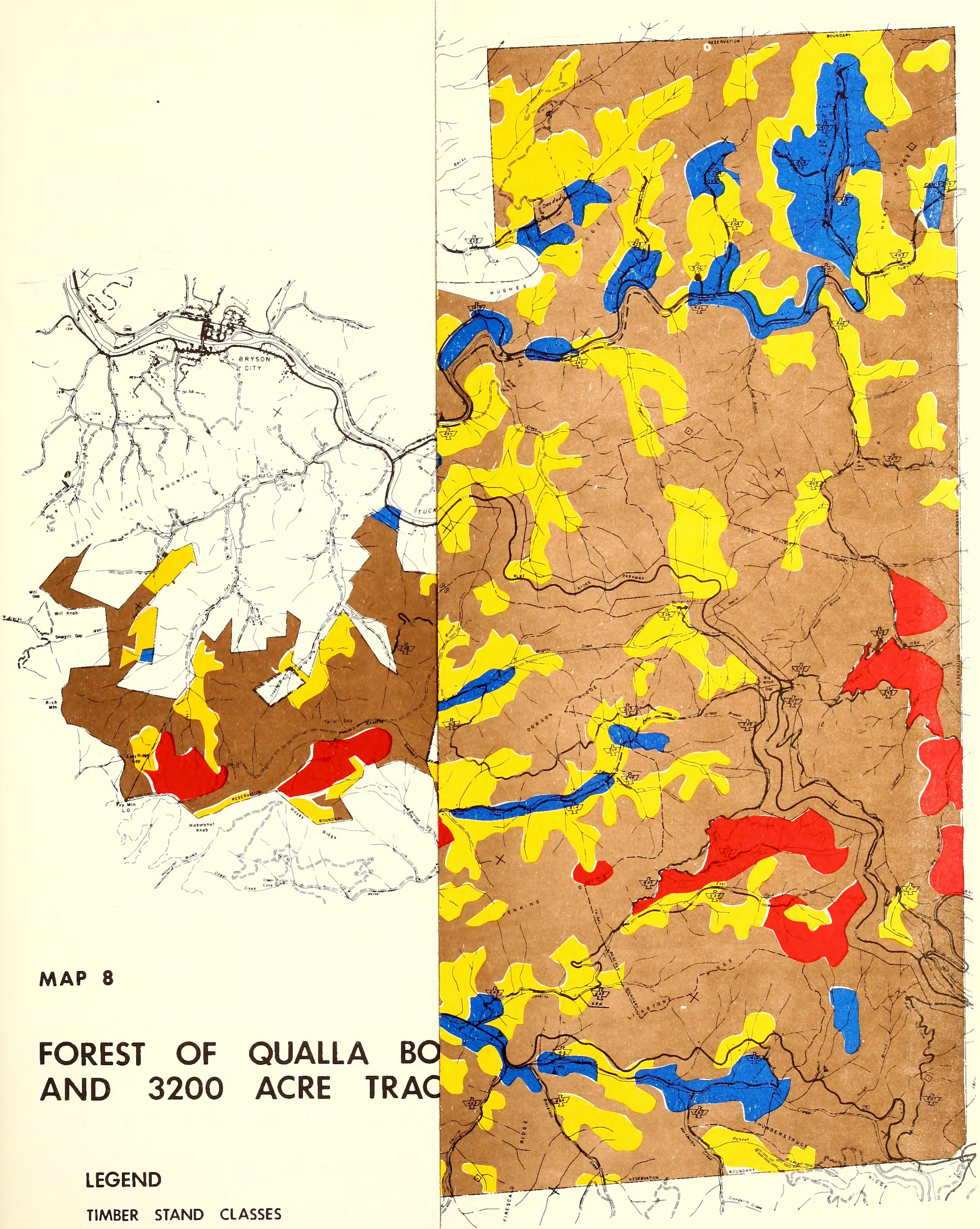
TIMBER STAND CLASSES

Sapling - Stands predominantly consisting of trees smaller in size than the 4-inch diameter class and containing very few, if any, sawtimber-size trees.

Pole - Stands predominantly consisting of trees in the 4-inch to 10-inch (conifers, 4-to-8-inch) diameter classes and containing very few, if any, sawtimber-size trees.

Sawtimber - Stands containing considerable proportions of sawtimber-size trees; with hardwoods of the 12-inch diameter class and larger and conifers of the 10-inch diameter class and larger.

Sapling-Sawtimber - Stands essentially of Sapling character but containing scattered individual or small groups of sawtimber-size trees.



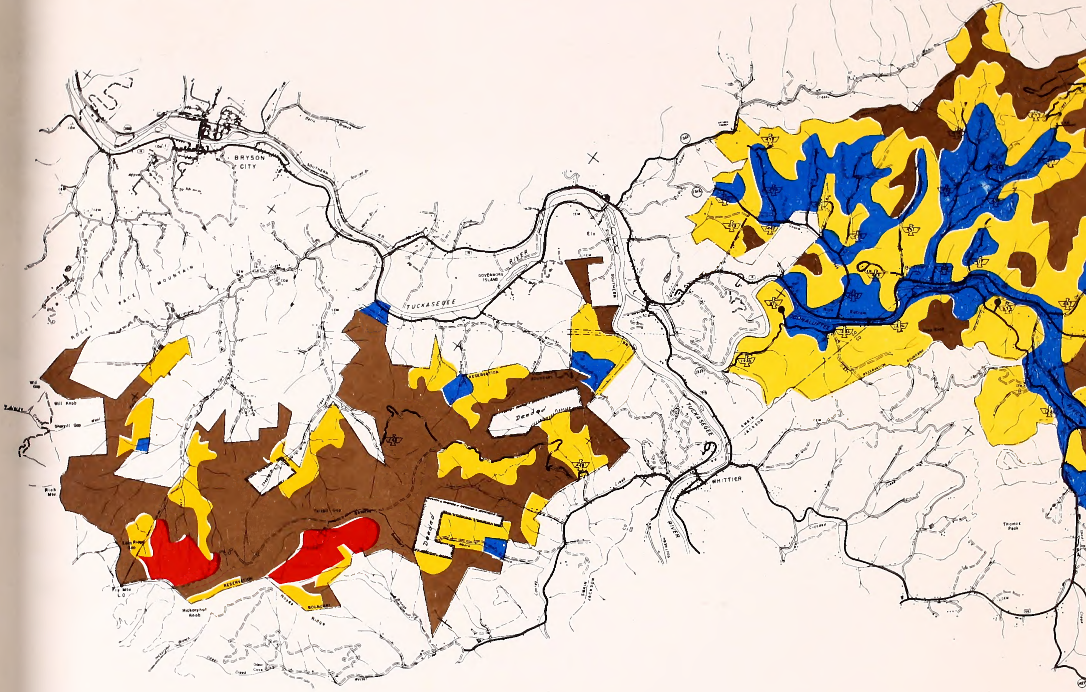
MAP 8

FOREST OF QUALLA BO
AND 3200 ACRE TRAC

LEGEND

TIMBER STAND CLASSES

🟫 SAWTIMBER (ALL CLASSES)
🟨 POLES AND SAPLINGS
🟦 NOT FORESTED (FARMS CLEARINGS, ETC.)
🟥 AREAS RECENTLY LOGGED



MAP 8

FOREST OF QUALLA BOUNDARY AND 3200 ACRE TRACT

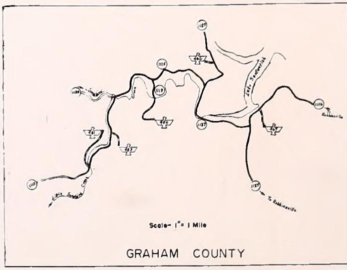
LEGEND

TIMBER STAND CLASSES

🟫 SAWTIMBER (ALL CLASSES)
🟨 POLES AND SAPLINGS
🟦 NOT FORESTED (FARMS CLEARINGS, ETC.)
🟥 AREAS RECENTLY LOGGED

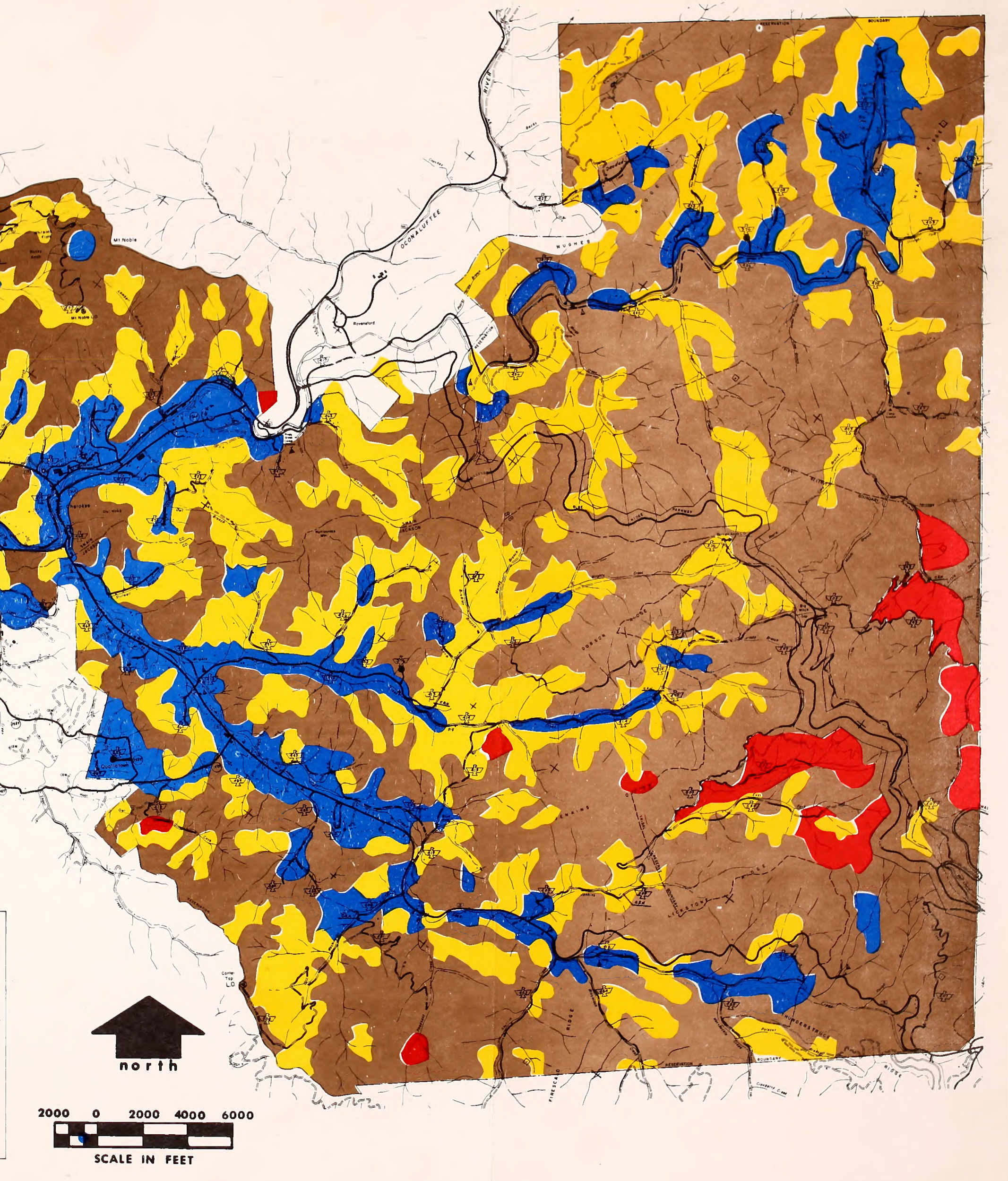
LEGEND

19 – U.S. ROUTES
186 – N.C. ROUTES
43 – B.I.A. ROUTES
CRN – Change in Route Number
▬ – Paved Road
▭ – Unpaved Road



Scale– 1"= 1 Mile

GRAHAM COUNTY



Mt Noble
Rocky Knob
Mt Noble L.O.
OCONALUFTEE
RIVER
Ravensford
HUGHES
RIDGE
RESERVATION
BOUNDARY
Cherokee
SWAIN
JACKSON
DOBSON
RIDGE
JENKINS
LICKSTONE
RIDGE
THUNDERSTRUCK
FINESCAD
RIDGE
Qualla town
Carter Top L.O.
north
2000 0 2000 4000 6000
SCALE IN FEET

Pole-Sawtimber - Stands essentially of Pole character but containing scattered individual or small groups of sawtimber-size trees.

SPECIES COMPOSITION

Yellow-poplar - Stands consisting entirely or almost so of yellow-poplar. It occurs throughout the lower elevational zone on broad drainage bottoms and the adjacent gentle slopes. This class appears to be generally restricted to the better site conditions and, as such, its original extent has been subject to heavy competition from farm clearing. Most of the remaining stands are of pole and sapling sizes but the trees have good form and are relatively tall for their diameters.

Oak - Stands consisting almost entirely of the oaks. The minor amounts of other species present are most commonly represented by hickory. This class is limited to the upper elevational zone at the eastern end of the Reservation, and there it occurs mainly on the ridge tops and southerly exposures of relatively poor site. Mature trees up to 30 inches diameter were measured but they are rather short in height and of poor form, with seldom more than 1-1/2 merchantable logs per tree.

Mixed Hardwoods with Oak Predominant - Stands consisting predominantly of the oaks but also having considerable amounts of other species. Hickory is the associated hardwood species most commonly present. These stands occur throughout the lower and middle elevational zones of the Reservation; along the ridge tops and, especially with increase in elevation, on southerly exposures. Mature tree sizes vary with the local site conditions. Diameters up to 24 inches are frequent but not many larger than that were noted. Most heights are in the range of 1 to 3-1/2 merchantable logs per tree. Pine frequently are intermixed, especially in the pole and sapling size classes.

Mixed Hardwoods with Oak Subordinate - Stands variously consisting of perhaps all the hardwood species indigenous to the locality, with the oaks not heavily predominant. Species combinations vary from area to area but, overall, the oaks, maples, basswood, birch, buckeye, beech and yellow-poplar provide most the the timber volume. This class is found throughout the Reservation; however, with decrease in elevation it becomes more restricted to the steeper northerly exposures. Among the remaining hardwood stands with mature trees, this class has the best development of trees in the sawtimber sizes, but it is high, steep and inaccessible. There are many with diameters in the range of 18 to 28 inches and with heights up to 4 merchantable logs in good proportion to diameter. This class also has pines frequently intermixed in the pole and sapling stands at the lower elevation.

Pines - Stands in which the predominant species is one of the pines. Three pine species (Virginia pine, pitch pine and white pine) were noted on the Reservation but the one most common and forming the basis for classification is the Virginia pine. As previously mentioned, many areas of hardwood stands have pines intermixed. The areas of the pine class, with that species in the predominance, are quite minor in extent and mostly on ridge tops and southerly exposures in the lower and middle elevational zones. More often than not the site conditions are rather poor. But few trees over 16 inches diameter and having more than 2 merchantable logs are to be found. Most of the stands are pole or sapling classes in size.

Hemlock - Stands in which hemlock comprises a significant part. In most situations this is more the result of tree size than relative densitites of the associated species since the mature hemlocks reach diameters of about 48 inches and heights approaching 100 feet. Individual trees occur scattered among the hardwood classes, especially on northerly exposures, throughout the Reservation but their development as distinctive stands is more in the middle and upper elevational zones, occupying drainage bottom areas. There are only a few of such stands.

Spruce - Stands consisting of spruce trees. Only a very few small areas of this class occur on the Reservation, near the Blue Ridge Parkway intersection at the eastern edge of the Reservation. The spruce trees on the Qualla Boundary and 3200 Acre Tract are of sizes up to about 24 inches in diameter and 75 feet in height.

STAND DENSITY

Dense - Stands in which the tree crowns cover essentially all of the ground space. This is the normal condition of the Reservation forests.

Open - Stands in which the tree crowns cover only a part of the ground space. In most instances of this classification, the cause has been timber cutting or firewood cutting of recent enough origin that the spaces of the removed trees are not yet filled in by new growth. In a few instances, however, the open growth is associated with excessively rocky ground or shallow soil

NON-TIMBER CLASSES

Farms - Areas that had evidently been cultivated for farm crops in the year preceding the aerial photography. Areas developed for commercial purposes are also included here.

Clearings - Areas that have been cleared for home or farm sites but on which little or no active cultivation was evident.

Brush - Areas of rhododendron with few intermingled trees. Most of these appeared to be on poor soil situations.

Rock and Bare Ground - Most of the areas given this designation consist of large road cuts and fills but they may also include natural rocky or barren situations and broad stream beds.

THE LAND STATUS SITUATION

In further consideration of the Cherokee forest, detailing the reconnaissance statistics of its present conditions requires a distinction to be made between the land in Tribal Reserve and that in Possessory Holdings.

The boundary between the Tribal Reserve and Possessory Holdings is only an approximate one, however. It has not been surveyed, no definite boundary markers are placed on the ground, what maps were available differed in showing its location, and there were differences of opinion between Bureau of Indian Affairs personnel as to where it was supposed to be. Indeed, the Tribal Reserve appears to exist only in the intent of some previous Tribal Council consideration and its limit is wherever some loosely defined or as yet undefined Possessory Holding does not make a competing claim. This situation interposes a serious roadblock in the development of a management plan for the Cherokee forest.

The boundary used for this report is that shown on a map provided by the Bureau's Branch of Forestry at Cherokee.

The same situation introduces a question concerning the statistics on Possessory Holdings. In the absence of any map compiled to show boundaries of the claims, it is not known if all the area thus designated is actually assigned - or if some parts still remain as unclaimed Tribal Land. For the purpose of this report, the assumption is made that all the land outside the designated Tribal Reserve is in Possessory Holdings.

THE STATISTICS OF THE FOREST

THE AREAS OF CLASSIFIED LANDS

The total area within the "Qualla Boundary" and "3,200-Acre" Tracts as shown on our map is 45,930 acres. Table #1 gives a breakdown of this total by the major classes of forest and land included.

Table 1 - Numbers of Acres in the Major Classes of Forest and Land

Class	Tribal Reserve	Possessory Holdings	Total
Sawtimber (all classes)	5,720	20,930	26,650
Pole and Sapling Stands	830	11,770	12,600
Total Forest	6,550	32,700	39,250
Farms, Developed Areas, Clearings	20	4,920	4,940
Brush, Bare Ground, River	60	320	380
Parkway Right-of-way	-	-	1,320
Total Reservation	6,630	37,940	45,890

The Tribal Reserve encompasses 6,630 acres, the Possessory Holdings 37,940 acres, and the area withdrawn from use for the Blue Ridge Parkway 1,320 acres. In the Tribal Reserve 6,550 acres are forested, with 5,720 acres of this having sawtimber, and only 80 acres are not forested. On the Possessory Holdings 39,250 acres are forested, with 26,650 acres having sawtimber; 4,940 acres are in farms, developed areas and clearings; and 380 acres in other non-forested classes. Of special significance here is the distribution of forested lands between the two ownership classes; 83 percent of the total forest and 78 percent of all stands containing sawtimber are in the Possessory Holdings. Clearly, the Possessory Holdings retain the key to any management plan for the total Reservation forest.

To further develop the acreage characteristics of the Reservation forest and its relationships with the Tribal Reserve and Possessory Holdings lands, the following tables are presented. Table 2 shows how the forest is constituted according to stand class, Table 3 according to species composition, and Table 4 according to stand density.

Table 2 - Number of Acres in the Forest Stand Classes

Class	Tribal Reserve	Possessory Holdings	Total
Sawtimber (3)	1,570	7,290	8,860
Pole-Sawtimber (23)	1,810	4,290	6,100
Sapling-Sawtimber (13)	2,340	9,350	11,690
Total Sawtimber	5,720	20,930	26,650
Pole (2)	450	7,050	7,500
Sapling (1)	380	4,720	5,100
Total Small-Tree	830	11,770	12,600
Total Forest	6,550	32,700	39,250

Sixty-eight percent (26,650 acres) of the total Reservation forest contains enough sawtimber-sized trees to be recognized in that class. Nearly 80 percent (20,930 acres) of this is in the

the Possessory Holdings area and the balance (5,720 acres) is in the Tribal Reserve. It is these parts of the Reservation that must be looked to for any early development of a sawlog harvest. The 32 percent of Reservation forest (830 acres of Tribal Reserve and 11,770 acres of Possessory Holdings) comprised wholly of small trees can at present be considered only as growing stock for the future. Moreover, even some of the stands with sawtimber trees at present have limited immediate value because of species composition, past cutting and other factors.

As would be expected, the bulk of the Reservation forest consists of the Mixed Hardwoods classes. This is advantageous since these are the stands which contain, except for yellow-poplar, most of the higher-value species. However, it is significant to note that the Tribal Reserve lands are less well situated than the Possessory Holdings in this regard. In the Tribal Reserve more than 23 percent of the sawtimber stands consist of the Oak class, which has previously been described as consisting of short, poorly-formed trees; mainly the lower-value oaks. The Possessory Holdings have less than 2 percent of their sawtimber stands in the Oak class. On the other hand, the Possessory Holdings have substantially greater proportions of the desirable yellow-poplar, although most of this is in the small-tree stands.

Table 3 - Numbers of Acres in the Forest Species Classes

Class	Tribal Reserve	Possessory Holdings	Total
Sawtimber (3, 23, 13) Stands			
Yellow-poplar (Y)	60	760	820
Oak (K)	1,340	280	1,620
Mixed; oak predom. (N)	670	6,440	7,110
Mixed; oak subord. (M)	3,360	12,290	15,650
Conifers (P,H,S)	290	1,160	1,450
Total Sawtimber	5,720	20,930	26,650
Small-Tree (2,1) Stands			
Yellow-poplar (Y)	30	3,140	3,170
Oak (K)	170	130	300
Mixed; oak predom. (N)	140	1,810	1,950
Mixed; oak subord. (M)	420	3,920	4,340
Conifers (P,H,S)	70	2,770	2,840
Total Small-Tree	830	11,770	12,600
Total Forest	6,550	32,700	39,250

Table 4 - Numbers of Acres in the Forest Density Classes

Class	Tribal Reserve	Possessory Holdings	Total
Sawtimber (3, 23, 13) Stands			
Dense	4,100	18,030	22,130
Open	1,620	2,900	4,520
Total Sawtimber	5,720	20,930	26,650
Small-Tree (2,1) Stands			
Dense	600	9,840	10,440
Open	230	1,930	2,160
Total Small-Tree	830	11,770	12,600
Total Forest	6,550	32,700	39,250

While the Reservation forest appears to be in a generally satisfactory condition in regard to its stocking, with 83 percent of the total area densely stocked with trees of at least sapling size, the 17 percent in open stands does suggest that a substanial area may, apart from stand and species classes, not be harvestable for some time. These open stands primarily consist of recent cutovers, incomplete land clearing, partially restocked burns and rocky ground situations. These open stands occur among all the species classes, with just one item greatly out of proportion to the relative areas. Nearly one-third of the open stands on the Tribal Reserve are in the low-value oak class.

THE VOLUMES OF TIMBER

The total net sawtimber volume in hardwoods 11.0 inches diameter, breast height, and larger and in conifers 9.0 inches diameter, breast height, and larger is estimated, on a reconnaissance basis, to be approximately 139 million board feet (Scribner). Table 5 shows a breakdown of this by ownership and species. These figures are not intended to represent cruise estimates suitable for development of a management plan. Rather their purpose is solely to be indicative pending a decision on obtaining such cruise estimates.

Table 5 - Reconnaissance Estimates of Total Net Sawtimber Volume (Scribner) in M Board Feet

Species	Tribal Reserve	Possessory Holdings	Total
Maple	2,000	9,000	11,000
Yellow-poplar	*	6,000	6,000
Ash, Basswood, Birch, Cherry, Cucumber	7,000	25,000	32,000
Red, Black & White Oaks	6,000	25,000	31,000
Chestnut Oak	3,000	12,000	15,000
Other Hardwoods	5,000	25,000	30,000
Conifers	4,000	10,000	14,000
Total	27,000	112,000	139,000

* Less than 1/2 million

Of the total volume, 20 percent (27 million board feet) is on the Tribal Reserve and 80 percent (112 million board feet) is on the Possessory Holdings. The more valuable species, comprising the first four groups listed in the table, are represented by a total of 80 million board feet; 15 million on the Tribal Reserve and 65 million on the Possessory Holdings.

No point is served in expressing these volumes as overall volumes-per acre for the Reservation forest since there is much variation between the different classes of stands found. In the reconnaissance sampling done for this estimate the range extended from 15,700 board feet per acre in Hemlock stands and 6,600 board feet per acre in some hardwood sawtimber stands to 300 board feet per acre in certain of the small-tree stands. Other variations exist in the species and kinds of logs that can be obtained from various stands. All of them can be developed to full significance by completion of a cruise related to the stand classification.

But while the magnitude of the total sawtimber resource as of Nobember, 1962, is evident, the volume available for early phases of any development plan is somewhat less. On the Tribal Reserve some 2,600,000 board feet was still to be taken from the Spread Branch Timber Unit and if there is any commitment on the adjacent Block II of the Bunches Creek Area, another sizeable portion of the Tribal Reserve would be unavailable. Additionally, some volume consists of residuals left for growing stock on recently cut areas, some of scattered trees in pole and sapling stands and some of trees having low merchantability because of species or form. The balance could be reduced to a degree that would make any major development of the Tribal Reserve timber wholly dependent upon a correlated development of the Possessory Holdings timber.

The Possessory Holdings timber, now in the hands of many as yet undefined owners, is subject to similar deductions from its total volume. Permit cuttings totalling 1 million board feet per year or more of sawlogs are currently being made while this study is being considered and fuelwood cuttings are taking unknown but no doubt significant volumes of merchantable-sized trees every year. However, the present balance should still be adequate to provide the basis for a major timber harvesting plan.

It is not within the scope of this study to estimate the volume of small trees but some indication of its magnitude can be obtained if average cordwood volumes per acre developed by the Southeastern Forest Experiment Station (Forest Statistics for the Mountain Region of North Carolina, 1955) can be applied to the stand classes here. Doing this results in a possible 20-25 thousand cords on the Tribal Reserve and 100-125 thousand cords on the Possessory Holdings. The Bureau of Indian Affairs estimate of fuelwood cutting by the Cherokees is 3,000 cords per year. Too little is known about this part of the forest to offer more than the comment that it adds substantially to the total resource..

THE TIMBER GROWTH

A revaluation of the existing growth data obtained by Bureau of Indian Affairs' forester at Cherokee in terms of the reconnaissance inventory estimates developed here suggests that the timber growth rate on the Reservation is greater than what has been assumed heretofore. Instead of the 5.04 percent or 120 board feet per acre regional net annual growth applied from the Southeastern Forest Experiment Station publication "Forest Statistics for the Mountain Region of North Carolina 1955", the rates now developed from the data specific to the Reservation, except for use of the regional mortality rate, are 6.51 percent or 230 board feet per acre per year. Ingrowth would supply another 35 board feet. The resultant current annual net growth thus indicated for the total Reservation would be 10.4 million board feet, of which 2.0 million is on the Tribal Reserve and 8.4 million is on the Possessory Holdings.

Pending a more complete inventory and growth study, these results should be considered high. Such factors as adequate representation of poorer sites in the growth measurements and the reduction of growing stock by current sawlog and fuelwood cutting can cause them to be significantly less. For economic value, species composition also will be a significant factor. But, in any event, it appears reasonable to believe that the net annual growth rate is currently producing at least 1.5 million board feet yearly on the Tribal Reserve and 6.0 million board feet yearly on the Possessory Holdings, for a combined 7.5 million board feet on the total Cherokee forest.

THE TIMBER MANAGEMENT POSSIBILITIES AND PROBLEMS

This Cherokee forest resource, considered as a whole, clearly has what is needed for the establishment of an effective long-range management program that can be profitable to the Tribal members. To capitalize this opportunity, however, it will be necessary to gain the acceptance and accomplishment of certain management requirements.

Covering 39,250 of the Reservation's total 44,570 acres (excluding the Parkway), there is a sufficiently large enough area to have a substantial potential for growing forest crops and to give ample "working room" over which to spread the harvesting sequence. Its distribution between stands containing sawtimber trees (26,650 acres) and the small-tree stands (12,600 acres), while not as heavy to the former as desired, still is sufficiently weighted there to provide a good backlog in which to work while some of the small-tree stands are growing to merchantable size. The acreage distribution of species classes shows good proportions of the more desirable and a reasonable minimum of the least productive.

By timber volume, the reconnaissance-estimated 139 million board feet currently in merchantable-sized trees further provides a sound base upon which to install a management program. And the distribution of this volume by species is also reasonably favorable, with more than half of it being in those of above-average value.

From the standpoint of timber growth, the 7.5 million board feet per year estimated in this reconnaissance inventory is capable of producing a substantial, regular income to the Tribal members. Even if no greater growth was developed through effective management, this will mean a 5.4 percent annual growth return of the timber capital. Moreover, this return will develop on land which, with minor area exceptions, does not now appear to have any other comparable direct income potential. And it will provide a continuing source of employment for the Cherokees.

What then, are the requirements for developing the timber income potential?

First is the determination by the Tribe that it wishes to develop the maximum income potential from its timber. Second is the assertion by the Tribe of its ownership of the timber and, with this, its position of control over the cutting practices applied to the individual Possessory Holdings. Third is the adoption of management objectives which will involve the total Reservation forest in one unified program and provide for the elimination of the current land-holding obstacles to such a program. (A practicable alternative could exclude some already-decimated holdings, however.) Fourth is the determination of each holding's land area and forest resource as the basis for evaluating its proportionate participation . And fifth is the inventorying of the total forest resource, including the Tribal Reserve, and the development from this of a management plan that will accomplish the established objectives.

Considering the fundamental underlying Tribal interest, the current Possessory Holdings' system is not compatible with good forest management - if, indeed, it is with any degree of management. The timber cutting that has taken place under it violates one of the basic tenets of forest management in failing to provide for alternate periods of cutting and growth. Instead, some areas are being repeatedly cut without allowing for the accumulation of growth while other areas are not under any cutting program at all. Both of these conditions cause a waste of the Tribe's forest capital; on the one hand by virtually complete removal of the growing stock and on the other by keeping growth rates at a reduced level through not removing the older and slower growing trees.

In contrast is the program being carried out under the direction of Bureau of Indian Affairs' foresters on the Tribal Reserve. Here, provision is made for both development of a current income from the forest and maintenance of the growing stock to produce future income. But the Tribal Reserve alone is not of sufficient size to sustain any considerable income. It is quite probable that the $45,000 received for stumpage in 1962 represents about the maximum that can be expected in any one year. And once the Tribal Reserve has been initially cut over (a matter of only a few years) the annual return will be sharply reduced.

Without combining the Possessory Holdings with this Tribal Reserve under one plan that places all the forest lands under good management practices, only the growth on the Tribal Reserve itself can be projected for future cuttings and Tribal income.

Lacking any assurance of orderly growth on the Possessory Holdings, the likelihood of the Tribe deriving any successive incomes from its forest capital there must remain in question. Control of fuelwood cuttings so that they will coordinate, rather than compete, with the sawlog cuttings also must be made effective, else even the best of planning is diluted.

FACTORS OF IMPORTANCE IN THE UTILIZATION OF THE TIMBER

Two such factors stand out as guides to what may be done about the utilization of the Cherokee timber. One is the experience in current sales of that timber, the other is the regional picture of manufacturing facilities.

CURRENT TIMBER SALES

According to the Bureau of Indian Affairs' Forester at Cherokee, the annual cut of sawlogs currently believed possible (based on growth estimates made before this study) is 5.5 million board feet. Approximately 1.5 million feet per year is now being sold from the Tribal Reserve and 1.0 million feet of sawlogs cut from the Possessory Holdings under permit. An additional estimated volume equivalent to 1.5 - 2.0 million board feet is also cut without permit from the Possessory Holdings for firewood and poles. Quite probably additional sawlog volume likewise is taken without becoming a matter of record. Whether or not the total comes to the 5.5 million growth estimate is unknown.

More than 350 permits for the removal of timbers from the Possessory Holdings are being issued each year. The permits range from 2,000 to 10,000 board feet in volume each. Some permits are also issued for the removal of dead and dying trees in the Tribal Reserve. The Tribe receives $4.00 per thousand board feet for green timber and $3.00 per thousand board feet for dead timber cut from the Possessory Holdings under permit. No species separation is made. Timber from the Tribal Reserve is sold on a bid basis, separated by species. It is estimated that no recent cutting has been done on about 20 percent of the Possessory Holdings by number; the acreage and volume represented is much greater.

The sales of logs from the Possessory Holdings generally are small in volume; often only a single truckload. Discussions with sawmill operators and log buyers around Cherokee indicate that these sales usually get lower than average prices, to the disadvantage of the log seller. There are several reasons for this. One is that the logs often have been cut with no thought of log grade, with the result that a lower grade is being offered for sale than could have been produced through better sawing practices. Another is that the logs often are offered for sale at the wrong time with regard to market conditions. And, by the nature of the sale, the log seller often has no alternative than to accept whatever price is offered for the logs on his truck.

An example of the effect of log grade on price is one instance where a standard price list is issued as shown on the following (Table 6):

Table 6 - Price List of W. C. Hennessee Lumber Co. for Logs Delivered to Sawmill, April 10, 1963

SPECIES	LOG GRADES			
	Clear 22" & UP	Sel. 14 to 21"	No. 1	No. 2
Cherry	$90.00	$75.00	$55.00	$35.00
Basswood	90.00	75.00	55.00	35.00
Birch	90.00	75.00	55.00	35.00
Maple, Hard & Soft	90.00	75.00	55.00	35.00
Oak, Mountain	90.00	75.00	55.00	35.00
Poplar	90.00	75.00	55.00	35.00
Walnut	125.00	75.00	55.00	35.00
Ash			50.00	30.00
Oak, Mixed			50.00	30.00
Pine, White			50.00	30.00
Beech			45.00	30.00
Gum, Black			45.00	30.00
Buckeye			45.00	30.00
Butternut			45.00	30.00
Hickory - 14" & Up Clear, Straight, Free of Knots, Rot and Shake			45.00	

A comparison of these prices with what was paid for the Spread Branch Unit timber sale on the Reservation, gives indication of value differences when some control is exercised over cutting practices, larger volumes are assured and the prices are established by competitive bidding. On this sale, made January 2, 1962, the stumpage prices received were as listed in Table 7. The successful bidder was the same lumber company whose delivered log prices are in Table 6.

Table 7 - Stumpage Prices Paid for Spread Branch Unit Timber Sale (January, 1962)

Species	Price Per Thousand Board Feet
Red Oak	$55.00
Basswood	46.00
Chestnut Oak	26.00
Birch	50.00
Hard Maple	60.00
Soft Maple	50.00
Buckeye	10.00
Beech	10.00
Silverbell	8.00
Locust	12.00
Hemlock	12.00
Ash	63.00
Cucumber	41.00
Miscellaneous Hardwoods	33.00
Chestnut	42.00

Adding to stumpage prices the reported logging costs of $35.00 per thousand board feet (which included $15.00 for hauling), the indicated delivered log prices for species common to both Tables 6 and 7 would then be as in Table 8:

Table 8 - Indicated Delivered Log Prices from Spread Branch Unit Timber Sale (January, 1962)

Species	Price Per Thousand Board Feet
Red Oak	$ 90.00
Basswood	81.00
Birch	85.00
Hard Maple	95.00
Soft Maple	85.00
Ash	98.00
Buckeye	45.00

But note should be made that these prices are for all logs brought from the woods, whereas the price list in Table 6 has different values on the several grades. It is, therefore, evident that, under the conditions generated by the stumpage sale, the average log value at the sawmill can be equal to or nearly equal to the value of the best grade as considered in the usual log purchase. What the total dollar difference between the two would be for any given volume of logs will be determined by the difference in average log grades.

A review of 18 U. S. Forest Service sales with competitive bidding made on National Forests adjacent to the Cherokee Reservation during 1962 shows a weighted average price for stumpage of $24.00 per thousand board feet. This compares with an average of $40.19 for the Spread Branch Unit sale. Although some of this difference is unquestionably due to variations in species composition and sale conditions, it still seems reasonable to believe that, kind for kind, the Cherokee timber was sold for better prices than average for the locality at that time.

Aside from this, however, it is well known that sawmill operators generally will pay more for logs if they can be assured of better quality and larger volumes on a continuous basis. That is the usual situation where there are established log markets. The present method of selling logs from the Possessory Holdings is not producing that benefit for the Tribal members.

TENNESSEE VALLEY AUTHORITY

DIVISION of WATER CONTROL PLANNING

FLOODS on OCONALUFTEE RIVER and SOCO CREEK
IN VICINITY of
CHEROKEE, NORTH CAROLINA

MAY 1957

EDITED

FLOODS

1957

Introduction

The flood of November 1906 was the highest in the memory of present residents on the Oconaluftee River and also its tributary, Soco Creek. On the latter stream a flood in March 1913 was practically the same as that of 1906. However, based on the flood experience of other streams and on the magnitude of flood producing storms that might occur on the watersheds of the Oconaluftee River and Soco Creek, even greater floods than those known to have occurred in the past may be expected on the streams in the Cherokee vicinity. On the Oconaluftee River and Soco Creek floods might be some 8 to 15 feet higher than those of 1906. Floods of these great magnitudes would be of rare occurance. However, the possibility of the occurrance of such floods does not preclude the use of the flood plain lands but emphasizes that this should be given appropriate consideration in planning the utilization and development of the flood plain lands.

Flood Histories

This section covers investigations of floods that have occurred in the vicinity of Cherokee in Swain and Jackson Counties, North Carolina. The streams and reaches investigated were:

Oconaluftee River from the mouth to Ravensford, North Carolina, a distance of 10.6 river miles.

Soco Creek from the mouth to mile 6.6.

The Oconaluftee River flows into the Tuckasegee River 4 miles upstream from Bryson City. Soco Creek is a tributary of the Oconaluftee River, entering that stream 5.5 miles above the mouth near the town of Cherokee, North Carolina.

OCONALUFTEE RIVER

On the Oconaluftee River the investigation of past floods covered the reach from the mouth upstream to mile 10.6 near Ravensford, North Carolina.

Records of stream stages and discharges have been maintained on the Oconaluftee River since January 1921 by the U. S. Geological Survey. Until September 1949 the stream gaging station was located at mile 7.4 near the Cherokee Indian School. Since June 1948 records have been maintained at a station near Birdtown, mile 3.1.

In 1937 and 1938 field engineers of the TVA's Hydraulic Data Branch made a search for flood history information on the Little Tennessee River and its major tributaries, including the Oconaluftee River. Historical works and newspaper files were searched for data but references to floods were few and files were often incomplete. The bulk of the information accumulated came from interviews with residents of the valley. A house-to-house survey was made, and all persons were contacted who were known to have witnessed the larger floods or who could furnish any information regarding them. Many of those contacted have since died, including two Cherokee Indians who were witnesses of the flood of March 1867.

Several of the larger floods in the last 20 years have been investigated by TVA engineers and the reports on these investigations have been reviewed for data on Oconaluftee River.

SUMMARY OF FLOOD HISTORY

1. The flood of November 1906 was the largest in memory of present residents of the Oconaluftee River valley. A flood in March 1867 may have exceeded the November 1906 flood but little information on this flood is available.

2. The flood of March 1913 was next to the 1906 flood over the reach below the mouth of Soco Creek. At Cherokee the two floods were about equal.

3. The flood of January 1946 was 1.5 feet lower than the 1906 flood at Cherokee and was the highest since stream gaging records began in 1921. Floods in April 1936, January 1947, February 1953, July 1955, and January 1957 all reached peak stages which were within about one foot of the 1946 flood crest height at Cherokee.

4. The records show that floods on Oconaluftee River have occurred with the greatest frequency in the months January through March. Large floods have occurred in several other months of the year.

5. Stream banks are 8 feet to 11 feet above low water over most of the reach investigated. Overflow begins at a stage of 9 feet at the Cherokee stream gage and becomes general at 13 feet.

6. The flood plain is less than 500 feet wide at most places. The widest overflow occurs along a two-mile reach above Cherokee, where the flood plain varies from 1,000 feet to 2,000 feet in width.

7. Three bridges cross Oconaluftee River in the reach investigated. Two U. S. Highway bridges have floor levels above the 1906 flood crest height. A flood on the order of either the 1906 or 1913 flood would overtop the secondary road bridge at Birdtown, mile 3.06.

8. Bryson Dam at mile 0.56 is 35 feet high and backs water to mile 2.2 at normal pool level. Built in 1924-1925 to generate power for Bryson City, it is now owned and operated by the Nantahala Power and Light Company.

OCONALUFTEE RIVER BASIN

Settlement

The Oconaluftee River basin, which is part of the Tuckasegee

River watershed, lies partly within Swain County and partly within Jackson County, North Carolina, in one of the highest and most rugged mountain areas in the eastern United States. Jackson County was formed in 1851. Swain County was formed in 1871 from a part of Jackson County and a part of Macon County.

Oconaluftee River is part of the river system which drains the south slope of the Great Smoky Mountains. The Qualla Tract and the 3200 Acre Tract of the Cherokee Indian Reservation is wholly within the basin. On these Tracts live most of the Eastern Band of the Cherokee Indians under the administration of the U. S. Indian Service. Nearly all the rest of the Oconaluftee River basin is inside the boundary of the Great Smoky Mountains National Park. The only land privately owned is along the lower two miles of the river and in a few small tracts at other points.

There are no residences within the Great Smoky Mountains National Park and the land there is almost 100 percent in forest. Land in the Indian Reservation is more than 90 percent in forest with only the valley bottoms and some of the less steep slopes in cultivation. Along the routes of main travel through the basin there has been rapid development in recent years of facilities which cater to the tourist trade.

The River and Its Valley

The drainage basin of Oconaluftee River is rectangular in shape, extending 12 miles east and west by 16 miles north and south. The total area is 188 square miles at the mouth and above Cherokee 131 square miles. The principal tributary along the lower reach is Soco Creek, with a drainage area of 45.3 square miles. Soco Creek joins the river at mile 5.5.

Above Cherokee the basin is steep with tributaries converging from the high mountain ridges at the north and east sides of the basin, conducive to a rapid concentration of runoff in heavy storms. The northern boundary of the basin is the State line ridge of the Great Smoky Mountains dividing North Carolina fron Tennessee. To the east is the Plott Balsam range, joining the State line ridge at Mt. Guyot, 6621 feet above sea level. Lowest points on the rim are Newfound Gap at the northwest corner of the basin, elevation 5200 feet, and Soco Gap near the southeast corner, elevation 4345 feet. Most of the basin rim is above 5500 feet elevation. Raven Fork drains somewhat more than half of the basin above Cherokee and joins Oconaluftee River at mile 10.3 at an elevation of 2000 feet.

The fall of the river averages 23 feet per mile for the 10.6 miles from the Ravensford vicinity to the mouth with no appreciable changes in slope over the reach. The width of the flood plain is irregular but less than 500 feet in most places. The most extensive bottom is from river mile 6.8 to 9.0, above Cherokee, where the width is 1,000 to 2,000 feet. Smaller bottoms are at the mouth of Soco Creek, at Birdtown, and at Goose Creek. The soil along the river has fair to good productivity, good drainage, and few boulders.

The older homes in the valley are built well above flood danger, but many of the newer homes and the commercial developments are at points where they would be affected by high floods.

Bridges Across the River

Three highway bridges and a concrete dam are in the reach investigated. Data on these bridges are given in Table 9. The two U. S. Highway bridges have been built since the 1906 flood and have floor levels above the crest height of that flood. The concrete girder bridge at Cherokee, mile 6.76, would probably be overtopped in a recurrence of the 1906 flood because of the effect of an approach fill on the right bank. The concrete arch bridge at mile 0.21 has sides which are solid above the arch openings and also solid guard rails. This bridge would cause considerable heading up if the 1906 flood were to be repeated. The secondary road bridge at mile 3.06 has a floor level which is under the 1906 and the 1913 flood levels at that point. (Two additional bridges have been constructed on the Oconaluftee River since the time this report was completed).

TABLE 9

OCONALUFTEE RIVER BRIDGE DATA

MILES 0.0 TO 10.7

				Elevations			
Miles Above Mouth	Identification and Type	Floor	Clearance	Low Water	1906 Flood Crest	1913 Flood Crest	1955 Flood Crest
0.21	U.S. Hwy. 19A, concrete arch	1805.8	1802.8	1784.9	1801	1797.2	1793
3.06	Side road, timber	1855.6	1853.6	1843.7	1861	1856.5	1851.
6.76	U.S. Hwy. 19 & 441, concrete deck	1947.0	1943.7	1929.2	1941.5		1937

The dam at mile 0.56 is a concrete multiple-arch structure 35 feet high with two power generating units. It was built in 1924-1925 by the town on Bryson City and was operated as a municipal plant until 1942 when it was acquired by the Nantahala Power and Light Company. It is now a part of their system serving the western counties of North Carolina. Sediment deposits have accumulated in the 30 years since the dam was built, and silt is now about 15 feet deep midway of the reservoir.

Development of Tourist Facilities

Two Federal highways pass through the basin and carry tourist traffic that is increasing yearly. U. S. Highway 441, which is the main route for travel through the Great Smoky Mountains

National Park, runs north and south through the basin. U. S. Highway 19, another important tourist route, crosses the basin east to west, intersecting U. S. Highway 441 at Cherokee. U. S. Highway 19 follows the right bank of Oconaluftee River for a short distance near the mouth and from mile 2 to mile 4.8. U. S. Highway 441 follows the left bank from mile 5.7 to Cherokee, then follows the right bank to the head of the basin at Newfound Gap.

Each year sees more shops and motor courts built to cater to the tourist trade. The property along U. S. Highways 19 and 441 in Cherokee is now quite extensively developed. More facilities are along U. S. Highway 441 above the Cherokee Indian School in the reach from mile 7.3 to mile 8.6. Other developments are along U. S. Highway 19, particularly at Birdtown, mile 3.7, and at Ela, mile 0.2.

FLOOD DATA

Flood Records

The U. S. Geological Survey has maintained a gaging station on Oconaluftee River since January 27, 1921, when a staff gage was established on the river at Cherokee, mile 7.4. A recording gage was installed at Birdtown, 4.3 miles downstream from the Cherokee gage, and records have been maintained there continuously since that date. Records at Cherokee were discontinued

September 30, 1949.

Local residents have been interviewed for information on flood heights and flood history. Newspaper files have been searched for flood references, and reports on flood investigations made by the Hydraulic Data Branch have been reviewed.

Flood Stages and Discharges

Table 10 lists stages and discharges for floods which have exceeded nine feet at the stream gaging station at Cherokee. For prerecord floods, crest stages have been estimated from high water marks where these were available. For floods occurring after September 1949, when records were discontinued at the Cherokee gage, the stage at Cherokee has been determined from a relationship developed for the Cherokee and Birdtown gaging stations.

Flood Occurrence

Of the 18 floods known, 5 occurred in January, 4 in February, and 3 in March. Other flood months were April, May, July, November, and December.

Hydrograph of January 1946 Flood

The January 1946 flood resulted from storm rainfall which fell from the afternoon of January 5 to midnight January 7 and averaged 6 inches over the watershed. Nearly 8 inches fell along the top of the Great Smoky Mountains. In addition a large percentage of the watershed was covered with snow which melted during the storm and added another 2 inches of water equivalent to the storm rainfall. At Cherokee the preliminary rainfall on January 5 to 7 caused a slow rise of about 4 feet in 48 hours. At 2 p.m. on January 7 a rapid rise to the crest began, amounting to 3.6 feet in 8 hours, or nearly 6 inches per hour. The river receded as fast as it rose and was above a stage of 9 feet or elevation 1947.4 for only 7 hours.

TABLE 10

OCONALUFTEE RIVER AT CHEROKEE, NORTH CAROLINA
FLOOD CREST ELEVATIONS AND DISCHARGES

The station at Cherokee, river mile 7.4, was established as a staff gage on January 27, 1921, and as a recording gage on May 17, 1934. The gage was discontinued on September 30, 1949. Since June 28, 1948, records of stage and discharge have been maintained at a stream gage at Birdtown, 4.3 river miles downstream from the Cherokee gage. This table includes all floods since January 1921 that exceeded a stage of 9 feet, elevation 1947.4. Prior to 1921 records are necessarily incomplete. Drainage area at Cherokee gage--131 square miles; zero elevation 1938.37, USC&GS 1936 Supplementary Adjustment.

Date of Crest	Gage Heights Stage (ft)	 Elevation	Peak Discharge Amount cfs	 Per Sq. Mile cfs
May 1840	(a)			
Mar. 1867	13	1951		
Nov. 1906	13	1951		
Mar. 27, 1913	13	1951		
Jan. 21, 1922	9.5	1947.9	7,500	57
Feb. 1936	9.10	1947.5	6,820	52
Apr. 6, 1936	10.25	1948.6	8,760	67
Feb. 3, 1939	9.68	1948.0	7,860	60
Dec. 29, 1942	9.20	1947.6	6,990	53
Jan. 7, 1946	11.50	1949.9	11,200	85
Jan. 20, 1947	10.60	1949.0	9,490	72
Feb. 14, 1948	9.20	1947.6	6,950	53
Nov. 6, 1948	9.45	1947.8	7,400	56
Jan. 5, 1949	9.30	1947.7	7,130	54
Mar. 29, 1951	9.0 (b)	1947.4	6,600	50
Feb. 21, 1953	10.3 (b)	1948.7	8,900	68
July 9, 1955	10.8 (c)	1949.2	8,400	64
Jan. 31, 1957	10.5 (b)	1948.5	9,300	71

(a) Stage unknown
(b) Estimated from Birdtown
(c) From high water mark.

Valley Cross Sections

A total of 21 valley cross sections were obtained along Oconaluftee River, extending to 20 feet above low water.

Flood Descriptions

The following descriptions cover the larger floods that have occurred on Oconaluftee River:

May 1840 - No high water marks were obtained for this flood on Oconaluftee River. However, the 1840 flood was the highest known on Tuckasegee River and it is probable that flood flow of major proportions came from Oconaluftee River. Mr. Gaston Griffin, who witnessed the 1906 flood at Birdtown, said that an old Indian told him at that time that the river was the highest it had been in 65 years or since about 1840.

March 1867 - This is the earliest Oconaluftee River flood for which data could be obtained. Field engineers who made the flood history search in 1937 interviewed two old Indians who had witnessed the 1867 flood near Birdtown. Mr. Sigley Ned had spent all his 81 years on the river and said the highest flood in that time occurred 3 years after the Civil War. He pointed out a spring at his old home on Gibbs Branch near Birdtown which he said was reached by backwater from the river. Elevation of the point, however, indicates that the mark was for the flood on the branch and was not a true elevation of the Oconaluftee River flood crest.

Mr. John Walkingstick, who also spent all his life on the river and was 85 years of age when interviewed, said a flood in 1867 was the highest in his knowledge and pointed out the place reached in his front yard. This mark is at Birdtown, less than a mile from the mark pointed out by Mr. Ned. No information was obtained referring to this flood at other points along the river.

November 1906 - This is the largest flood in the period since white men first settled along the river. Mr. Julius W. Sherrill, who lived near the mouth of Oconaluftee River, said that at the time of the flood old people told him the river was about as high as it had ever been. Mr. Gaston Griffin told about an old Indian who said that the river was the highest it had been in 65 years. Older people talked to along the length of the river described the 1906 flood as the highest they had seen.

March 1913 - The next largest flood after November 1906 occurred in March 1913. Three persons who were interviewed in 1938 and who had seen both the 1906 and 1913 floods said that the 1906 was the highest and the 1913 the next highest in their memory. Mr. Taylor Seay saw the floods near the mouth, Mrs. Kate Lambert saw them at Birdtown, and Mr. W. H. Duncan saw them at Cherokee. High water marks put the 1906 about 3 feet higher than the 1913 at the mouth and at Birdtown. A study of the flood profiles indicates, however, that the two floods were probably very nearly equal through Cherokee.

April 1936 - Several persons interviewed during the flood history search in 1938 said that this flood was the third highest in a period of 35 to 40 years, ranking next in magnitude to the floods of 1906 and 1913. Enough marks were found to establish the elevation of the flood from the mouth of the river to mile 9.

January 1946 - This is the highest flood on Oconaluftee River since 1921, when stream gaging records were begun. The crest stage at the stream gage at Cherokee was 11.50 feet, 1.25 feet higher than the crest stage for the flood of April 1936. A heavy depth of snow in the mountains at the beginning of the storm contributed to the high runoff in the Oconaluftee River basin.

July 1955 - This was the second highest flood in the period for which stream gaging records are available. A flood mark showed a peak stage equivalent to 10.8 feet on the old Cherokee gage or 0.7 foot lower than the January 1946 flood crest. The heaviest runoff came from the Raven Fork drainage, where several timber bridges were lost or damaged and roads were washed and scoured. Three swinging footbridges were washed out, including one at the Birdtown Bethabara Church, river mile 4.4. In the Cherokee vicinity water surrounded a number of shops and courts, damaged stored goods, and washed yards and parking areas. A temporary timber footbridge just built at river mile 8.9 was carried away.

SOCO CREEK

The investigation of floods on Soco Creek covered the reach from the mouth, one mile south of Cherokee, North Carolina, to the U. S. Highway 19 bridge at mile 6.6.

No official records of flood elevations or discharges have been maintained on Soco Creek. To obtain flood information local residents have been interviewed and a search has been made of available newspaper files. High water marks have been located for floods occurring in March 1931, April 1936, August 1940, and February 1953.

SUMMARY OF FLOOD HISTORY

1. The flood of November 1906 was the greatest in the memory of any person now living on or near Soco Creek. No specific data could be located as to the height of this flood.

2. The second highest known flood on Soco Creek occurred on March 27, 1913. This flood was almost as high as the one in 1906. The 1913 flood overtopped the creek banks by approximately five feet and covered the flood plain for width up to 1,200 feet.

3. Floods about two feet lower than the 1913 flood occurred in April 1936 and August 1940. A flood in February 1953 was the highest since 1940.

4. Known floods on Soco Creek have occurred in winter and summer months. Records on the Oconaluftee River indicate that floods in this area occur with greatest frequency in the months of December through March.

5. The creek banks along Soco Creek near Cherokee are overtopped at stages 4 to 8 feet above the stream bed. Above mile 2 the flood plain is wide with a rather uneven surface. Width of the flood plain ranges up to 2,000 feet.

6. Damages caused by known floods of the past have been small in the Soco Creek valley. However, floods as high as those of 1906 and 1913, if they occurred again, would cause considerable damage to commercial developments which have come into the valley since construction of U. S. Highway 19 in 1943.

7. Nine road bridges cross Soco Creek in the reach investigated. The 1953 flood reached floor level on two of these bridges. A recurrence of the 1913 flood would overtop at least four bridges.

SOCO CREEK BASIN

Settlement

The Soco Creek basin is located near the northern edge of Jackson County which was formed in 1851 and named in honor of Andrew Jackson. The first white settlement in the county was made on Scott Creek, a few miles south of Soco Creek, in about 1790.

Soco Creek watershed is almost wholly within the Cherokee Indian Reservation. Of the lower 6.6 miles of the creek only the portion between mile 0.5 and mile 1.6 is in private ownership. Land in the reservation is owned by the Federal Government and administered by the Tribal Council. Individual tracts are leased or assigned to persons who qualify for residence on the reservation. Many tracts have been occupied by the same family for years. The only condition for retaining the use of the land is that the assignees remain on it and continue to use it. Indian families have naturally come to look on this land as their own to use and develop. Where the tracts have become desirable for tourist developments, this has resulted in some complications.

The Creek and Its Valley

The drainage basin of Soco Creek is fan-shaped, roughly nine miles long by five miles wide. The total area at the mouth is 45.3 square miles. Wrights Creek, entering at mile 3.0 and draining less than 10 square miles, is the principal tributary of Soco Creek. Other tributaries drain much smaller areas and the channels drop steeply down the heavily forested mountain slopes at right angles to the main stream.

Headwaters of the creek are on the ridge which divides the Tuckasegee and French Broad River basins. High mountains rim the Soco Creek basin on three sides. The Plott Balsams to the south and southeast are generally above 5,000 feet. Barnett Knob and Soco Bald on the north rim are 4,500 and 5,400 feet above sea level, respectively. Soco Gap, the highway outlet eastward from the basin is at elevation 4,345. The elevation of the mouth of the creek is 1,900 feet above sea level. The rugged watershed is approximately 90 percent forested.

The average fall in the creek in the 6.6 miles covered by the investigation is 61 feet per mile. Some flattening of the slope occurs midway of the reach and the lower three miles has a fall of about 45 feet per mile. The valley floor is quite extensive for a mountain stream, ranging up to 2,000 feet in width in the reach investigated. The surface of the flood plain is rather uneven, probably as a result of scouring by high velocity flow in large floods of the past. The soil is productive and well drained. Boulders are not a serious problem in cultivation.

Development of Tourist Facilities

Prior to 1943 the economy of the Soco Creek valley was tied to farming and timber cutting. In that year U. S. Highway 19, which formerly passed south of Soco Creek through Sylva and Balsams Gap, was rerouted to pass through Cherokee and Soco Gap. The new location follows Soco Creek upstream from mile 2 to the gap.

A large part of the steadily increasing tourist traffic to the Great Smoky Mountains and the Cherokee Indian Reservation travels on Highway 19 through Soco Creek area. To serve these tourists a number of motel and craft shops have been built along the highway. Those built to date are privately owned by Cherokee Indians or persons in their families. None in the Soco Creek area are tribal owned developments.

The old homes along Soco Creek are built well back from the creek and are out of flood danger. The newer homes and commercial developments, however, are along the highway and would be affected by a high flood.

Bridges Across the Creek

Table 11 lists data on the nine bridges that cross Soco Creek in the reach investigated. The table also shows the elevation of the 1953 flood crest at each bridge and of the 1913 flood crest where this is available. The floors of five bridges are less than 10 feet above low water and none are higher than 15 feet above low water.

FLOOD DATA

Flood Records

No official record of stream stages and discharges has been maintained on Soco Creek. Information on flood heights and dates of occurrence has been obtained largely by interviews with local residents. Files of newspapers at Asheville and Sylva have been searched but no references were found to floods on the creek.

TABLE 11

SOCO CREEK BRIDGE DATA
MILES 0 TO 6.6

		Elevations				
Mile Above Mouth	Identification and Type	Floor	Clearance	Low Water	1953 Flood Crest	1913 Flood Crest
0.18	Side road, concrete deck	1917.1	1914.5	1906.5	1912.0	1918
0.61	U.S. Hwy. 441, concrete deck	1934.0	1930.7	1921.4	1926.5	1931
1.84	U.S. Hwy. 19, concrete arch	1992.4	1987.9	1977.5	1981.5	1986
3.27	Side road, timber	2067.2		2059.1	2066.0	2069
4.09	Side road, timber	2119.7	2118.4	2113.6	2119.7	2122
4.45	Side road, timber	2138.4	2136.6	2130.9	2138.4	
5.07	Side road, timber	2188.8	2186.8	2182.4	2186.0	
6.13	Side road, timber	2268.2	2266.5	2258.8	2263.2	
6.65	U.S. Hwy. 19, concrete arch	2324.6	2321.6	2311.6	2316±	

The general flood of February 21, 1953, in the Little Tennessee River basin was investigated by field engineers of the Hydraulic Data Branch of TVA, and the report on their investigation contains information on the Soco Creek flood.

Valley Cross Sections

A total of 38 valley cross sections were obtained along Soco Creek, extending in elevation up to 15 feet above low water.

Flood Descriptions

The following descriptions cover the larger floods that occurred on Soco Creek:

November 1906 - Data obtained during the investigation indicates that this flood was the highest known since the settlement of Soco Creek. High water marks obtained along Oconaluftee River showed the 1906 flood to be the highest known on that stream.

Mr. Jarrett Blythe, who is now Chief of the Eastern Band of Cherokee Indians and who has been active in tribal affairs all his life, was the only person found who could recall the 1906 flood. Mr. Blythe lived on Oconaluftee River at the time so could not give a great deal of information on the flood on Soco Creek, but he recalled that a severe flood took place and that it was higher than at any time since. The area was being logged at the time with wood flumes used to bring logs down from the cutting area. These flumes were all washed out, according to Mr. Blythe.

The Reverend Arsene Thompson, who has played a prominent part in the Cherokee drama "Unto These Hills" since its start, has lived at his present home on Soco Creek for 20 years. The former owner, now deceased, showed a point reached by a flood "many years ago". This point is 1.4 feet higher than the point reached there by the February 1953 flood. It was impossible to determine whether this old mark was for the 1906 flood or the flood of March 1913.

Newspaper files at Sylva and Asheville yielded no useful information on the 1906 flood.

March 27, 1913 - One high water mark was found for this flood, putting it about 5 feet above the flood of February 1953. Mr. Tom Tolley, who has lived for 41 years at mile 2.5 on Soco Creek, recalled that a flood about 40 years ago came within a few feet of reaching his barn. He said that water completely covered the creek bottom at that point. Mr. G. George, age 53, who has lived his entire life along Soco Creek and has been at his present home at mile 2.6 for ten years, said that there was a big flood "about 1915" which washed away all the bridges on Soco Creek and was the biggest he remembered. He could not point out any marks, however.

The Jackson County Journal, published in Sylva, North Carolina, described what it called the worst freshet in years on Scott Creek on March 27, 1913. The issue for March 28, 1913 stated:

"Sylva and Jackson County were visited Wednesday night (March 26) with the heaviest rainstorm in years; it practically amounted to a flood. It rained all day Wednesday and all night until about 12:30 when the flood gates opened and the rain poured in torrents, accompanied by heavy wind and a severe electrical storm.

"Many bridges in different portions of the county were washed away. The lower portions of Sylva and Dillsboro were covered by the raging waters of Scott Creek. The trestle at Sylva was rendered useless and the track between Sylva and Beta was washed away in many places. From reports along the Murphy Division (Southern Railway) the flood seems to have been general throughout this section, and not less than ten trestles have been washed out...At least three of the bridges across Savannah Creek are gone."

Scott Creek adjoins the Soco Creek basin on the south. Savannah Creek enters the Tuckasegee River at Dillsboro, seven miles south of Soco Creek by airline.

April 1936 - This flood was about equal to the flood of August 30, 1940, over the upper part of the reach investigated and slightly higher than that flood near the mouth. This flood and the 1940 flood were confused in the minds of a number of persons, but sufficient data were obtained to establish this relation. The 1936 flood exceeded the February 1953 flood by about 2-1/2 feet near the mouth. Farther upstream the difference dropped off to less than one foot.

August 30, 1940 - This flood was remembered by most persons because of the severe flood at that time on Tuckasegee River. Little or no damage occurred on Soco Creek. Mr. Jarrett Blythe witnessed both the 1936 and the 1940 floods from his home near Macedonia Church and said that the 1936 was higher at that point. Mrs. Carl Thomasson was raised at mile 1.4 and remembers two floods which got to her house, one obiviously the April 1936 flood and the other the flood of August 1940. The highest one of these reached nearly to the floor of the porch. Mrs. Callie Arch said the largest of the two floods at her place at mile 0.3 was in 1936, remembering that as the year her husband returned from Washington, D. C.

February 21, 1953 - This flood was fresh in the memory of residents of the valley. Although little damage resulted, most persons could point out where overflow occurred and give some idea of the height reached. Overflow occurred along narrow strips of shallow flow with relatively low velocity. High water marks taken along these overflow strips usually did not agree with crest elevations along the main channel.

The only damage resulting in the Soco Creek basin was at the Cherokee Indian Methodist Church, at mile 4.0, where shallow overflow washed away newly placed topsoil from the lawn.

ACKNOWLEDGEMENTS

This section of this report covering the flood histories of the Oconaluftee Rivers and Soco Creek has been prepared by personnel of the Hydraulic Data Branch, Division of Water Control Planning, under the general direction of Reed A. Elliot, Chief Water Control Planning Engineer, and the immediate supervision of Albert S. Fry, Chief, Hydraulic Data Branch.

Field investigations for this report were made under the direction of James W. Beverage, Head of the Field Investigations Section. Investigations of the flood history of Soco Creek, the flood of July 1955 on Oconaluftee River, and cross sections and other field data on both streams were made by Myron O. Jensen, District Engineer, assisted by James K. Curtis, Area Engineer, and Claude M. Douthit, Engineering Aide. Flood history investigations on the Tuckasegee and Oconaluftee Rivers were made under the supervision of James E. Goddard, who was Head, Field Investigations Section, at the time of the investigations.

Paul C. Spath, Head of the Office Engineering Unit, prepared charts and maps for the report.

The flood information was analyzed and this section of the report was prepared by Myron O. Jensen.

Tennessee Valley Authority
Division of Water Control Planning

II

MAXIMUM FLOOD OF REASONABLE REGIONAL EXPECTANCY

The preceding section of this report has presented an account of the floods that have occurred in the Cherokee vicinity during the past 100 or more years. Along with such historical floods, it is important to consider the magnitude of floods that may occur on the Tuckasegee and Oconaluftee Rivers and Soco Creek. It is with these maximum floods of reasonable expectancy in the Cherokee vicinity that this section of this report is chiefly concerned. The possibility of floods of this type, even though remote, should be recognized in studies of local flood problems. For these studies, both the magnitude and elevations of the maximum floods of reasonable regional expectancy in the Cherokee vicinity as given in this report are satisfactory for consideration in zoning and similar local problems where no definite factors of safety need be applied. For the design of protective works the failure of which would be disastrous, floods of greater magnitude might be required.

Determination of Peak Discharge and Elevations

Determinations have been made of the peak flood discharges and the elevations of the water surface at the flood crests for floods that may reasonable be expected to occur on the Tuckasegee and Oconaluftee Rivers and Soco Creek in the Cherokee vicinity. In these determinations, consideration has been given to (1) great storms which have already occurred in the general vicinity of Cherokee and that might have occurred over the drainage area of the Tuckasegee River and its tributaries near Cherokee, and (2) the greatest flood discharges that are known to have occurred on streams in the general region of Cherokee. As a result of these studies, the maximum floods of reasonable regional expectancy have been determined to have crest discharges as follows on the three streams:

(a) Tuckasegee River - 150,000 cubic feet per second at Bryson City.

(b) Oconaluftee River - 69,000 cubic feet per second at Cherokee.

(c) Soco Creek - 30,600 cubic feet per second at U. S. Hwy. 19 bridge near Cherokee.

These discharges are substantially greater than those of maximum known floods of the past on the three streams. On the Tuckasegee River at Bryson City the maximum expected flood crest discharge is nearly 70 percent greater than that of the 1840 flood as given in the flood history section of this report. No accurate data are available on the crest discharges of the 1906 flood on Oconaluftee River and Soco Creek, but the maximum expected floods on these streams might be 4 to 5 times as great as the 1906 peak flows. These maximum floods of reasonable regional expectancy are higher than any known to have occurred in this region, but considering the possible heavy storm precipitation that might occur in the Cherokee vicinity, it is estimated that floods of these large magnitudes might sometime occur. As a basis for comparison of the floods of reasonable expectancy with those that have been experienced, the following known flood discharges on streams in the general region are given:

TABLE 12

FLOOD DISCHARGES OF COMPARABLE REGIONAL STREAMS

Stream	Location	Year	Drainage Area Square Miles	Peak Flood Discharge in Cubic Feet per Second Total	Peak Flood Discharge in Cubic Feet per Second Per Square Mile of Drainage Area
French Broad River	Calvert, N.C.	1916	103	36,000	350
Tuckasegee River	Bryson City, N.C.	1840	655	90,000	137
E. Fk. Tuckasegee	Tuckasegee, N.C.	1940	80.3	30,000	370
Little River	Walland, Tenn.	1875	192	50,000	260
Valley River	Tomotla, N.C.	1898	104	32,000	308
Caney Fork	E. Laport, N.C.	1940	39.4	21,700	551
Newfound Creek	Leicester, N.C.	1940	34.2	12,000	350
Hominy Creek	Candler, N.C.	1940	28.9	12,400	429

Water surface elevations for floods of the magnitude of those of reasonable expectancy on the three streams were computed by using stream characteristics for selected reaches as determined from topographic maps, valley cross sections, and observed flood profiles.

The flood discharge and elevations for these maximum floods of reasonable regional expectancy should be given appropriate consideration in studies of flood problems, particularly those connected with flood zoning, in the Cherokee vicinity. Developments in an area subject to the probability of such floods should be planned and carried out with due recognition of the losses that could be sustained if the floods should occur.

Velocities

Because of the steep slope, averaging about 23 feet per mile, velocities of flow in the main channel of the Oconaluftee River during the maximum flood of reasonable regional expectancy would be as high as 19 feet per second. This velocity would occur in the steep section below Adams Creek, Just below the state highway bridge at Cherokee, North Carolina, the channel velocity would be about 17 feet per second. Velocities in the overflow area of the Oconaluftee River would range up to 7 feet per second, the highest velocities also occurring in the steep section below Adams Creek.

The average slope of Soco Creek is 56 feet per mile. Such a slope would produce flow velocities in the main channel during the maximum flood of reasonable regional expectancy as high as 28 feet per second in a narrow gorge about one-half mile downstream from U. S. Highway 19 bridge. Velocities in the overflow area would range up to 7 feet per second, except in the above-mentioned narrow gorge where the overflow velocity would be about 11 feet per second.

The average slope of Tuckasegee River between Bryson City and Whittier is 14 feet per mile. Velocities of flow in the main channel in the vicinity of Bryson City during the maximum flood of reasonable regional expectancy would range between 13 and 19 feet per second. Just below the Everett Street bridge the main channel velocity would be 16 feet per second. Velocities in the overflow area would range up to 9 feet per second in the Bryson City vicinity, and just below Everett Street bridge would be about 4 feet per second. Similar high velocities would occur upstream to Whittier.

Such flow velocities in all three streams, in combination with the great depths, would create a hazardous situation, particularly if the flood were to occur during the night.

Frequency

The frequency of floods of the magnitude of those of the maximum floods of reasonable regional expectancy is not susceptible of definite determination. These floods would be considerably larger in peak discharge than any known to have occurred in the Cherokee vicinity. They would be some 6 to 15 feet higher than the elevations actually experienced in the highest known floods on the three streams. Over perhaps several centuries of record, these maximum floods of reasonable regional expectancy will occur on the average only at rather long intervals of time, but such floods could occur this year or in any succeeding year.

Larger Floods Possible

Floods larger than those of maximum reasonable regional expectancy are meteorologically possible. However, the combination of meteorological factors that would be necessary to produce such floods would occur at very rare intervals, if at all. While the possibility of floods of this magnitude are of greater importance in some flood problems than in others and should not be overlooked in the study of any flood problem, such floods, because of their rarity and uncertainity of occurrence on a given watershed, usually need be given serious consideration only where dependence is placed on works constructed for protection of valuable property from floods.

Acknowledgements

Determinations of the magnitude of the maximum floods of reasonable regional expectancy were made by the Flood Control and Hydraulic Data Branches of the Division of Water Control Planning under the general direction of Reed A. Elliot, Chief Water Control Planning Engineer, and the immediate supervision of Charles W. Okey, Chief, Flood Control Branch, and Albert S. Fry, Chief, Hydraulic Data Branch. For the Flood Control Branch, flood studies were under the direction of Edward J. Rutter, Head, Project Studies Section, and computation of water surface elevations was under the direction of B. J. Buehler, Head, Operation Studies Section. For the Hydraulic Data Branch, flood studies were under the direction of Alfred J. Cooper, Head, Hydrology Section.

Tennessee Valley Authority
Division of Water Control Planning
Hydraulic Data Branch

REGIONAL FLOODS IN VICINITY OF CHEROKEE, NORTH CAROLINA

Supplement No. 1

FLOODS ON OCONALUFTEE AND TUCKASEGEE RIVERS AND SOCO CREEK IN VICINITY OF CHEROKEE, NORTH CAROLINA

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Hydraulic Data Branch

REGIONAL FLOODS
IN VICINITY OF CHEROKEE, NORTH CAROLINA

Large floods have been experienced in the past on streams in the general geographical and physiographical region of Cherokee, North Carolina. Heavy rainstorms comparable to those that caused these floods could occur over the watersheds of Oconaluftee and Tuckasegee Rivers and Soco Creek. In such event, floods would result on these streams comparable in magnitude to those that occurred on the neighboring streams. Floods of this size are designated as Regional Floods. It is therefore desirable, in connection with any determination of future floods that may occur on Oconaluftee and Tuckasegee Rivers and Soco Creek, to consider the floods that have occurred in the Cherokee region on watersheds whose topography, watershed cover, and other physical characteristics are similar to the watersheds of these three streams.

Maximum Known Regional Floods

Table 13 lists the maximum known floods experienced on watersheds comparable to those of the Oconaluftee and Tuckasegee Rivers and Soco Creek and generally within 40 miles of Cherokee.

Included also are two locations in the watershed of Nolichucky River which are about 70 miles northeast of Cherokee. Streams which differ significantly in watershed characteristics from those of the Oconaluftee and Tuckasegee Rivers and Soco Creek have not been included. The discharges of the maximum known floods on the Tuckasegee and Oconaluftee Rivers and Soco Creek are given in the table.

The greatest known flood on Tuckasegee River and its principal tributaries in the vicinity of Cherokee and Bryson City occurred in May 1840. In 1896, Mr. L. M. Pindell of the Chattanooga office of the U. S. Weather Bureau, in his "A Paper on the Tennessee River and Flood System," reported the following statement of Miss Jennie Collins, special rainfall observer at Bryson City: "The oldest inhabitant states that the highest water occurred in 1840...." On the Oconaluftee River the 1906 and 1913 floods, the highest in the memory of the present residents, were also exceeded in height by the May 1840 flood according to information handed down by the Indians. No information is available on the rainfall that produced the great 1840 floods.

Another of the earliest documented large storms in this region was that of February 23-25, 1875. During this storm very heavy rainfall was experienced over the entire eastern Tennessee River watershed resulting in high floods on streams all over this territory. Cold weather preceded the storm and the rains probably fell on frozen ground, contributing to the high flood water runoff. In the vicinity of the Little River watershed rising in the Great Smoky Mountains, the rainfall totaled 8 or more inches in about two days. The resulting flood was higher than any known by the oldest inhabitants at that time and has not been exceeded since.

Another large storm occurred on May 18-21, 1901. This storm extended from the eastern Tennessee River Basin east as far as the coast. Rainfall was particularly heavy in the vicinity of the Watauga and Nolichucky Rivers where approximately 8 inches of rain fell within a 24-hour period on ground that had been saturated from earlier rains. The numerous waterspouts and landslides that were reported in the area attest to the intensity of the rainfall. The resulting flood, which became known as the "May Tide" on the Nolichucky River, is one of the highest floods that has occurred on a relatively large drainage area in the Cherokee region.

The most recent large storm that has occurred in the region was that of late August 1940. Heavy thunderstorm rains occurred along the Southern Appalachian Mountains of eastern Tennessee and western North Carolina. About 2½ weeks prior to this storm, in mid-August, most of the watersheds along the eastern Tennessee Valley divide from the Blue Ridge Mountains south to the Hiwassee River basin had experienced high floods from a hurricane that brought heavy rainfall to the area. Much of this same area again received heavy rainfall from the late August storm which followed. The upper Tuckasegee River watershed streams, which had been moderately flooded by the mid-August storm, rose to record heights during this latter storm. An average of over 10 inches of rain fell in approximately 24 hours on the Tuckasegee River watershed above Tuckasegee, North Carolina. The total rainfall diminished downstream from Tuckasegee, and at Bryson City the average rainfall for the watershed was approximately 7 inches. On the Tuckasegee River in the Cherokee vicinity this flood was the highest in the past 80 years or more.

All of the floods that are listed in Table 1 have occurred on watersheds in the region of Cherokee that are generally similar in physical characteristics. This indicates that floods of like magnitude, modified to take into account drainage area characteristics, may occur on the Oconaluftee and Tuckasegee Rivers and Soco Creek in the future.

Cherokee Vicinity Streams vs. Regional Flood Discharges

Table 13 is a tabulation of flood discharges. The largest known flood on the Oconaluftee and Tuckasegee Rivers and Soco Creek has been exceeded by floods on other streams in this region. However, the storms that caused the maximum floods on the streams in the Cherokee region could occur over the watershed of the Tuckasegee River, including those of Oconaluftee River and Soco Creek, in which case floods of like magnitude, modified to take into account differences in drainage area characteristics, could occur in the future on the three streams.

Using only the criteria of the experienced maximum flood discharges on streams in the Cherokee region, it would be reasonable to expect future floods on the Tuckasegee and Oconaluftee Rivers and Soco Creek of magnitudes as shown in Table 14. Floods of this magnitude are designated as Regional Floods.

Flood Heights for Various Discharges

Table 15 compares recent flood heights with the heights that would be reached on the three streams if floods of the magnitude of the Regional Flood or the Maximum Flood of Reasonable Regional Expectancy occurred, or if the greatest known flood recurred.

TABLE 13

MAXIMUM KNOWN FLOODS ON STREAMS IN CHEROKEE REGION

Stream	Location	Drainage Area	Date	Peak Discharge	
				Amount	Per Sq. Mi.
Nolichucky River	at Embreeville, Tenn	805	May 22, 1901	120,000	149
Little Tennessee River	at Judson, N.C.	664	March 1867	50,000	75
Tuckasegee River	at Bryson City, N.C.	655	Aug. 30, 1940	61,600	94
Tuckasegee River	at Bryson City, N.C.	655	May 1840	90,000	137
Nolichucky River	at Poplar, N.C.	608	July 1916	93,000	153
Little Tennessee River	at Almond, N.C.	451	Feb. 28, 1902	42,000	93
Little Pigeon River	at Sevierville, Tenn	353	Feb. 25, 1875	55,000	156
Little Tennessee River	at Iotla, N.C.	323	Feb. 28, 1902	38,000	118
Little River	neary Maryville, Tenn	269	Feb. 1875	60,000	223
Little River	near Walland, Tenn	192	Feb. 1875	50,000	260
Cheoah River	at Johnson, N.C.	177	Nov. 19, 1906	40,000	226
Tuckasegee River	at Tuckasegee, N.C.	143	Aug. 30, 1940	40,800	285
Oconaluftee River	at Cherokee, N.C.	131	May 1840	17,500	134
Cullasaja River	at Cullasaja, N.C.	86.5	Aug. 30, 1940	16,500	191
E. Fk. Tuckasegee River	near Tuckasegee, N.C.	80.3	Aug. 30, 1940	30,000	374
Soco Creek	at Mouth, Cherokee,N.C	45.3	Mar. 27, 1913	11,500	254
Deep Creek	at Mouth, Bryson City, N.C.	43.9	May 1840	20,000	455
W. Fk. Little Pigeon River	at Gatlinburg, Tenn	42	April 1, 1896	17,000	405
Caney Fork	above Cowarts, N.C.	39.4	Aug. 30, 1940	21,700	551
M. Prong W. Fk. Pigeon River	above Spruce, N.C.	8.4	Aug. 30, 1940	16,400	1,950

TABLE 14

REGIONAL FLOOD PEAK DISCHARGES

Stream	Location	Drainage Area	Peak Discharge
		sq. mi.	cubic feet per second
Oconaluftee River	Cherokee stream gage	131	40,000
	Birdtown stream gage	184	49,000
Tuckasegee River	Above Oconaluftee River	401	73,000
	Below Aconaluftee River	589	92,000
	Bryson City	655	100,000
Soco Creek	Mouth	45.3	23,000

TABLE 15

RELATIVE FLOOD HEIGHTS

Date	Stream	Mile	Estimated Peak Discharge	Above Recent Flood
			cubic feet per second	feet
1940	Tuckasegee River	12.72	61,600	0
1840*			90,000	2.5
Regional			100,000	5.4
Max. R.R.E.			150,000	11.2
1955	Oconaluftee River	7.38	8,400	0
1906			14,500	2.0
Regional			40,000	9.3
Max. R.R.E.			69,000	15.0
1953	Soco Creek	0.61	2,500	0
1906			13,000	8.0
Regional			23,000	12.6
Max. R.R.E.			30,600	16.0

* The 1840 flood at this location would be about 1.8 feet higher under present conditions.

Acknowledgments

This supplement has been prepared by personnel of the Hydraulic Data Branch, Division of Water Control Planning, under the general direction of Reed A. Elliot, Chief Water Control Planning Engineer, and the immediate supervision of Albert S. Fry, Chief, Hydraulic Data Branch.

INITIAL HOUSING STUDY

EASTERN BAND OF CHEROKEE INDIANS

INTRODUCTION

Providing a quantity of standard housing sufficient to meet present and expected demands for housing by the Eastern Band of Cherokee Indians is indeed a complex problem. The initial housing element is a manifestation of the concern of the Tribe for housing. Its primary purpose is to insure that housing and housing-related problems are understood and are being incorporated into the comprehensive planning efforts. The initial housing element establishes short range housing objectives and outlines previous and future planning activities and implementation actions which are aimed at generally improving the housing environment of the Eastern Band of Cherokee Indians, solving its identified housing problems and achieving the established housing objectives.

In order to understand the present housing situation, it is essential to understand the historic sequence which lead to the development of current problems.

CHEROKEE HOMES OF THE PAST

Houses of poles were the earliest type known to the Cherokees, and these were later supplanted by the log cabin of the pioneer white settlers. The log cabin had become the common type of dwelling among the Cherokees by the period of the American Revolution. In the nineteenth century, plank or frame houses gradually supplanted the log cabin, which is now very rare.

1540 The earliest glimpse that we have of Cherokee culture is from the scattered notations from the De Sotos' Expedition of 1540 (Hakluyt, 1851, p.60). These narrators record the province of Chalaque as being inhabited by a poverty stricken race subsisting on roots, herbs, service berries, and such game as deer and turkey, which they shot with the bow. They were clothed in a few skin garments made mostly of deer hide and wore feather headdresses. They lived in palisaded (surrounded with a fence of poles or stakes) villages and possessed a barkless dog.

1775 The next view that we obtain of the Cherokee homes is from Bartram, Adair and Timberlake some two centuries later. The Cherokee of the middle eighteenth century as pictured by these writers were a people living in scattered settlements on the waterways of the southern Appalachians. The towns were at considerable distances from each other because level tracts of as much as 450 acres were rare and the rugged topography furnished few suitable sites for extensive settlements. Where settlements did occur, it was necessarily on the banks of some stream. The rivers were used in every important religious rite as well as in fishing, fowling and the stalking of deer.

The ancient houses were of split sticks laid in the mud, the ends being made fast by means of gutters in the side of the posts. The household fire was lighted in the middle of the building, and a hole was left in the roof above it for smoke to get out. On the side of the house were small holes one foot square for windows. There were beds on the side and the back ends of the house three feet high and covered with cane fastened together or some other kind of mattress. There was a separate house for the females, who always retired when visitors arrived. A whole settlement was made up of near relatives, and the family connections generally settled together. The head of a village always invited strangers in, and his wife their wives.

Within the household, no male could carry water. The women prepared food, did the washing, and assisted in the fields. Formerly a whole town enclosed a large field, of which each family had a particular share, indicated by land marks. In all the towns men and women worked together first in one part, then in another, according to the direction of him whom they had selected to manage the business and whom they called in this respect their leader. Individual fields were separated from each other by ridges of earth, stones, or posts. Except when they were employed in the common fields, the men did little save hunt. Generally the women gathered wood for the cooking except for the assistance of the old men. The women also carried water for family use and pounded the corn.

The Indians being all soldiers, mechanisim could make but little progress; beside this, they laboured under the disadvantage of having neither proper tools, or persons to teach the use of those they had: Thus, for want of saws, they are obliged to cut a large tree on each side, with some great labour, to make a very clumsy board; whereas a pair of sawyers would divide the same tree into eight or ten in much less time. Considering this disadvantage, their modern houses were tolerably well built. A number of thick posts is fixed in the ground, according to the plan and dimensions of the house, which rarely exceeded sixteen feet in breadth, on account of the roofing, but often extended to sixty or seventy in length beside the little hot house or asi. Between each of these posts is placed a smaller one, and the whole wattled with twigs like a basket, which was then covered with clay very smooth, and sometimes white-washed. Instead of tiles, they covered them with narrow boards. Some of these houses were two story high, tolerably pretty and capacious; but most of them very inconvenient for want of chimneys, a small hole being all the vent assigned in many for the smoke to get out.

The Cherokee asi, or "hot house", as it was called by the old traders, is the equivalent of the sweat-house of the western tribes. It was a small hut of logs plastered over with clay, with a shed roof, and just tall enough to permit a sitting or reclining, but not a standing position inside. It was used for sweat-bath purposes, and as it was tight and warm, and a fire was usually kept smoldering within, it was a favorite sleeping place for the old people in cold weather. It is now obsolete.

1796 In dress and house building, the Indian style was practically unchanged.

1819 In the spring of 1819, Thomas Nuttall, the naturalist, ascended the Arkansas, and he gives an interesting account of the Western Cherokee as he found them at the time. In going up the stream, "both banks of the river, as we proceeded, were lined with the houses and farms of the Cherokee, and though their dress was a mixture of indigenous and European taste, yet in their houses, which are decently furnished and in their farms, which were well fenced and stocked with cattle, we perceive a happy approach toward civilization.

While in Georgia, before the removal, Chief John Ross had a brick Mansion furnished with rosewood and mahogany, with silver plates and imported china.

1826 By 1826 the mass of the Cherokees lived in cabins, some of which were built of hewn logs and were floored and furnished with chimneys, while well to do slave owners built comfortable two story houses, some of which were really elegant, and were living in much the same style as the white planters of the same economic standing in the south. They had comfortable homes, cultivated fields, churches, schools and a printing press.

HOUSING INVENTORY

In February, 1974, the Department of Natural and Economic Resources in coordination with the Aid to Tribal Government Program, the Economic Development Administration Planning Staff in Cherokee, and the Qualla Housing Authority, conducted a survey of the housing which is located on lands owned by the Eastern Band of Cherokee Indians rating all structures, using three classifications.

Standard -	Structures which have no defects or only slight defects which are correctable during regular maintenance.
Deteriorating-	Structures having defect which require major repairs to prevent further deterioration.
Dilapidated -	Structures which are unfit and unsafe for human occupancy. Such housing has one or more critical defects which are beyond economical repair. The term substandard, as used in this study encompasses housing of deteriorating and dilapidated condition.

The survey indicated that there are a total of 1,263 dwellings located within the lands owned by the Eastern Band of Cherokee Indians of which 244 were mobile homes. Homes rated in

HOUSING CONDITIONS BY COMMUNITY

EASTERN BAND OF CHEROKEE INDIANS

TABLE #16

1974

Community	Total Dwelling Units (1)	Mobile Homes	Structural Condition		
			Standard	Deteriorating	Dilapidated
Cherokee County	67	24	7	14	22
Snowbird	115	12	49	25	29
Big "Y"	73	5	37	12	19
Painttown	196	47	76	43	30
Soco	246	62	104	23	57
Big Cove	131	18	56	27	30
Birdtown	225	23	130	31	41
3200 Acre Tract	29	8	7	4	10
Cherokee	181	45	72	20	36
TOTAL	1,263	244	538	207	274

(1) Includes Mobile Homes

SOURCE: Department of Natural and Economic Resource, Division of Community Assistance standard condition composed 43 percent of all dwellings or 538 units. There were 207 dwellings in the deteriorating category which made up 16 percent of all homes.

Dilapidated units accounted for 22 percent of the total or 274 dwellings. Mobile home units were not rated by condition because as shown in Table 16, the highest number of substandard structures and the largest total number of dwellings are located in Soco Community. Cherokee County had the highest percent of substandard units among the communities when the number of substandard units was compared to the total dwellings located in the community. All communities had more than 50 percent substandard units except Big Y which had 49 percent substandard.

The location of dwelling units by community is shown on Maps #9 - #17.

Other Housing Characteristics

The following information was derived from the U. S. Census of Population. The totals therefore do not exactly equal those presented by the actual housing survey. The percentages however should be reasonably accurate.

Crowding

The number of persons per room provides a measure of the utilization of housing. Units with more than one person per room are considered crowded. It is generally accepted that 1.51 or more persons per room represents severe crowding.

Approximately 12.87 percent of the dwelling units on land owned by the Eastern Band of Cherokee Indians were classified as severely overcrowded in 1970. A total of 313 housing units (38.36 percent) has an occupancy rate of over 1.01 persons per room. This is compared with 6.8 percent for the state as a whole.[1]

The ill effects of overcrowding have long been established; however, the psychological effects related to such an enivronment are not nearly so well documented nor understood. It appears these effects may be far more detrimental to the individual than those of a physical nature. A perception of one's self that leads to pessimism and passivity; stress to which the individual cannot adapt; poor health and a state of dissatisfaction; pleasure in company but not in solitude; cynicism about people and organizations; difficulty in household management and child rearing; and external relationships rather than deep internal or family relationships are examples of some of the maladjustments related to overcrowded conditions within the home.

Unit Size

The importance of size of houses or apartment lies primarily in its use as a measure of the adequacy of dwelling units to satisfy the requirements of families of various sizes and composition and as a basis for projecting future unit size requirements in an area. The median number of rooms is 4.2 for housing units. The median for both state and nation is 5.0. Table #17 gives a breakdown by the number of dwelling units of various sizes.

---

[1] - U.S.Bureau of the Census, Census of Population: 1970,American Indians

Units in Structure

As shown in Table #18, there are only 16 dwelling units in the study area which contain more than one unit. This represents only 1.96 percent of the total number of dwellings. This is much lower than the percent for the state of North Carolina which was 11.58 and for the United States (27.83).

Plumbing Facilities

One indicator of the condition of housing which has been used by the Bureau of the Census is the existance of plumbing facilites. As shown in Table #3, 63.85 percent of the dwelling units have a complete bathroom. The percentages for the state (99.98 percent) and the nation (99.99 percent) are substantially higher than for that of the study area.

Value and Rent

The median value of owner-occupied dwelling units within lands owned by the Eastern Band of Cherokee Indians was $6,500 in 1970. A total of 36.52 percent of the owner-occupied dwelling units were in the low-value bracket of less than $5,000 and only 2.61 percent were in the high-value brackets of $20,000 or more (see Table #19).

The total number of rental units within the study area in 1970 was 107, approximately 42.99 percent of the housing units rented for between $40 and $59. There were 9.35 percent of 10 units for which the rent was less than $40 and 19.62 percent, or 21 units, were in the rental bracket from $80 to $149. (see Table #19)

TABLE #17

HOUSING CHARACTERISTICS
Eastern Band of Cherokee Indians, 1970
Rooms, Persons, Persons per Room

Cherokee, N. C.	% of Total Households	N. C.	U.S.
Total Households	23.63%=Total Households per Total Population		
In Owner occupied units			
percent	80.64	60.14	58.92
In renter occupied units	19.36	31.84	34.80
Rooms - All Units (Yr. Rd.)			
1 room	1.96	0.6	1.81
2 rooms	3.31	1.6	3.49
3 rooms	19.61	7.8	10.10
4 rooms	34.93	24.6	20.85
5 rooms	20.96	29.5	25.11
6 rooms	8.82	20.2	20.10
7 or more	10.42	15.8	17.65
Median		5.0	5.0
Persons - Owner occupied units			
1	10.64	11.0	11.94
2	21.12	30.0	30.11
3	21.28	20.9	17.51
4	20.67	18.7	17.36
5	13.07	10.4	11.42
6 persons or more	37.23	8.9	21.19
Median, all occupied units	3.9	3.2	3.1
Median, owner occupied units	3.8	3.2	3.3
Median, renter occupied units	4.3	3.3	2.7
Persons per room			
1.00 or less	61.64	93.3	93.56
1.01 to 1.50	25.49	5.4	5.19
1.51 or more	12.87	1.4	1.25
Units with all Plumbing facilities			
1.01 or more	22.55	83.22	83.75

SOURCE: U.S.Bureau of the Census, *Census, Population, 1970*; N. C. Dept. of Natural & Economic Resources, Division of Community Assistance

HOUSING CHARACTERISTICS

Eastern Band of Cherokee Indians, 1970

TABLE #18 Units in Structure, Year Structure Built, Selected Equipment

	Cherokee, N.C. % of Total Housing Units	N. C.	U. S.
Units in Structure			
I. (includes Mobile Home or Trailer)	98.04	88.42	72.17
2	1.23	4.67	8.04
3 and 4	.73	2.58	5.26
5 to 49 (5 or more)	-0-	4.3	14.52
Year Structure Built			
1969 to March 1970	10.29	4.68	3.44
1965 to 1968	23.04	12.57	9.67
1960 to 1964	24.26	13.60	11.94
1950 to 1959	17.77	22.05	21.42
1940 to 1949	9.80	15.60	12.98
1939 or earlier	14.84	31.57	40.56
Selected Equipment			
With Complete Bathroom	63.85	99.98	99.99
With more than 1 Bathroom	3.19	23.90	27.30
With Piped Water in Building	90.07	93.08	97.62
With Public Water Supply	35.54	54.42	81.68
With Public Sewer	10.78	45.32	71.18
With Air Conditioning	9.80	32.70	35.80

SOURCE: U.S. Bureau of the Census, Census, Population, 1970
N.C. Dept. of Natural and Economic Resources, Division of Community Assistance

HOUSING CHARACTERISTICS
Eastern Band of Cherokee Indians, 1970

TABLE #19 Automobiles Available, Value, Contract Rent

	Cherokee, N. C. % of Total Households	N. C.	U. S.
Automobiles Available			
1	45.10	44.90	47.71
2	10.78 (2 or more)	32.49	29.32
3 or more	1.72	5.58	5.51
None	44.12	17.02	17.47
Value	% of Owner Occupied		
Specified owner occupied units	(28.19% of total Households)		
Less than 5,000	36.52	10.80	5.74
5,000 to 7,499	23.04	12.20	7.10
7,500 to 9,999	3.91	11.80	8.37
10,000 to 14,999	21.30	23.20	20.15
15,000 to 19,999	12.61	17.80	20.28
20,000 to 24,999	2.61	10.20	14.75
25,000 to 34,999	-0-	8.40	14.01
35,000 to 49,999	-0-	3.80	6.46
50,000 or more	-0-	1.60	3.14
Median	$6,500	$13,000	$17,100
Contract Rent	% of Specified Renter Occupied Units		
Specified Renter occupied units	(13.11% of Total Households)		
Less than $30.00	5.61	12.00	3.68
$30 to $39	3.74	9.40	3.86
$40 to $59	42.99	23.60	13.14
$60 to $79	-0-	18.10	18.52
$80 to $99	6.54	9.50	14.92
$100 to $149	13.08	12.30	25.26
$150 to $199	-0-	2.80	10.27
$200 to $249	-0-	0.40	2.57
$250 or more	-0-	0.20	1.96
No Cash Rent	28.04	11.80	5.82
Median		$59.00	$89.00

SOURCE: U.S.Bureau of the Census, Census of Population, 1970;
N.C.Dept. of Natural and Economic Resources, Div. of Community Assistance

PUBLIC EFFORTS

In an effort to cope with the housing problem the Tribal Council of the Eastern Band of Cherokee Indians in 1962 authorized the formation of a public corporation known as the Qualla Housing Authority. Its purpose as stated in the charter are as follows:

a. Remedying on the Reservation unsafe and unsanitary housing conditions, that are injurious to the public health, safety and morals;

b. Alleviating the acute shortage of decent, safe and sanitary dwellings for families of low income; and

c. Providing employment opportunities on the Reservation through the construction, reconstruction, improvement, extension, alteration or repair and operation of low-rent dwellings.

Since its creation in 1962, the Qualla Housing Authority has undertaken six major projects. It is currently preparing for the construction of two hundred additional units primarily mutual self-help housing. The various programs in which they participate include rental housing, and mutual help housing.

Rental Housing

The first housing project to be undertaken by the Qualla Housing Authority was rental housing using the "conventional" method. The Conventional program in Indian areas is essentially a program in which the housing is constructed for a local housing authority by a building contractor or developer, and is operated as rental housing by the local authority.

The dwelling units are rented by the local housing authority to low-income families at rents based on their income, but no greater than one-fourth of the families' adjusted income. Qualla Housing Authority currently operates 36 rental units which were built in 1966 as its first project.

Mutual-Help Program

The mutual-help program was established by HUD in 1964 in cooperation with the Bureau of Indian Affairs to meet the needs of very low-income American Indians on reservations. The basis of the mutual-help program is to provide an opportunity for home ownership which would not otherwise be available. Under this method, a group of participating members of the Eastern Band of Cherokee Indians contribute their labor in the construction of the houses. The labor which is contributed consists of shop and site work specifically the shop work is the completion of rafters and sidewalls. This labor which is performed at night and on Saturday constitutes a down payment which can be up to 10 percent of the value of the home.

HUD contracts to pay annual contributions at the highest authorized annual rate to help repay the funds borrowed by the housing authority in the development of the mutual-help housing. Should the participants' contributions (i.e. their initial equity) constitute twenty percent of the development cost of the housing, HUD's annual contributions could retire the loans in 17 years.

Under mutual-help and conventional rental programs as well, HUD has had two partners; the Bureau of Indian Affairs (BIA) provides administrative assistance to the Housing Authority and the Indian Health Service (HEW) provides sanitary facilities.

To date, 280 homes have been constructed by the Eastern Band under this program.

Assistance from the Bureau of Indian Affairs

In 1968 BIA initiated a home improvement program. Under this program, funds are available for repair and reconditioning of existing housing. Participants in this program are primarily the elderly, the handicapped, widows and others who are unable to participate in the Mutual-Help Program. Approximately 5 percent of the dwellings in the study area have been assisted by this program.

IDENTIFICATION OF HOUSING PROBLEMS

A necessary first step toward improving the housing environment for members of the Eastern Band of Cherokee Indians is a concise delineation of housing and housing-related problems. Many of these problems are identified in Chapter 14 of the Code of Ordinances of the Eastern Band of Cherokee Indians. They are as follows:

a. That there exist on the Cherokee Indian Reservation unsanitary, unsafe, and overcrowded dwelling accommodations; that there is a shortage of safe or sanitary dwelling accommodations available at rent or prices which persons of low income can afford; and that such shortage forces such persons to occupy unsanitary, unsafe and overcrowded dwelling accommodations:

b. That these conditions cause an increase in and spread of disease and crime and constitute a menace to the health, safety, morale and welfare of the residents of the Reservation; that these conditions necessitate excessive and disproportionate expenditures of public funds for crime prevention and punishment, public health and safety protection, fire and accident prevention, and other public services and facilities;

c. That these slum areas cannot be cleared, nor can the shortage of safe and sanitary dwelling for persons of low income be relieved through the operation of private enterprise.

In addition to the general information above, several problems which can be specified are:

(1) There is a substantial shortage of low and moderately priced rental housing.

(2) There is a total of 481 residential structures in the study area which are substandard.

(3) There is a shortage of homes for moderate income persons who do not qualify for the various assistance programs,

(4) Lots where mutual-help homes have been built have severe erosion problems.

(5) The driveways adjoining Mutual-Help homes have not been paved and in some cases are not properly graded.

(6) Many newer homes including those built under the mutual-help program are becoming substandard because of improper maintenance.

(7) There is a lack of public water and sewer facilities.

(8) Approximately 38.36 percent of the dwelling units in the study area are overcrowded.

IDENTIFICATION OF OBSTACLES TO THE SOLUTION OF HOUSING AND HOUSING-RELATED PROBLEMS

Over time, certain circumstances or environmental factors exist which hinder or prevent the achievement of solutions to the identified housing and housing-related problems. It is important that the Tribe be aware of these obstacles, thereby enabling them to give proper consideration to these obstacles as plans are developed to solve the housing problem.

The following listing summarized the principal obstacles to these problems for the Eastern Band of Cherokee Indians.

> There is a shortage of land suitable for the construction of standard low and moderately-priced housing. This situation is due primarily to the adverse topography and the absence of water and sewer service.
>
> Although very limited FHA and VA funds have been available to home buyers on the lands owned by the Eastern Band of Cherokee Indians, conventional lending agencies will not finance homes because of the land situation. For a detailed analysis of the complexities of this situation see The Comprehensive Plan, Volume III, The Impact of Land Tenure.

Qualla Housing Authority can only build on Indian trust land.

The Qualla Housing Authority has not had funds available to provide for the inspection of the Mutual-Help homes.

Urban services and facilities, particularly water and sewer, would be difficult to provide economically because of the low density of population in some areas and the topography.

Income limits for Mutual-Help housing prohibit many families from participating in the program.

Mutual self-help housing cannot be rented or sold without the specific approval of the Housing Authority.

Participants in the Mutual-Help program must be enrolled members of the Eastern Band of Cherokee Indians of 1/16 blood degree or more.

STATEMENT OF HOUSING OBJECTIVES

Over the period from 1974 to 1977, the following housing and housing-related objectives should be sought by the Eastern Band of Cherokee Indians:

Increase the supply of low and moderately priced housing in the study area.

Initiate an education program to instruct owners of new homes in proper maintenance and repair procedures.

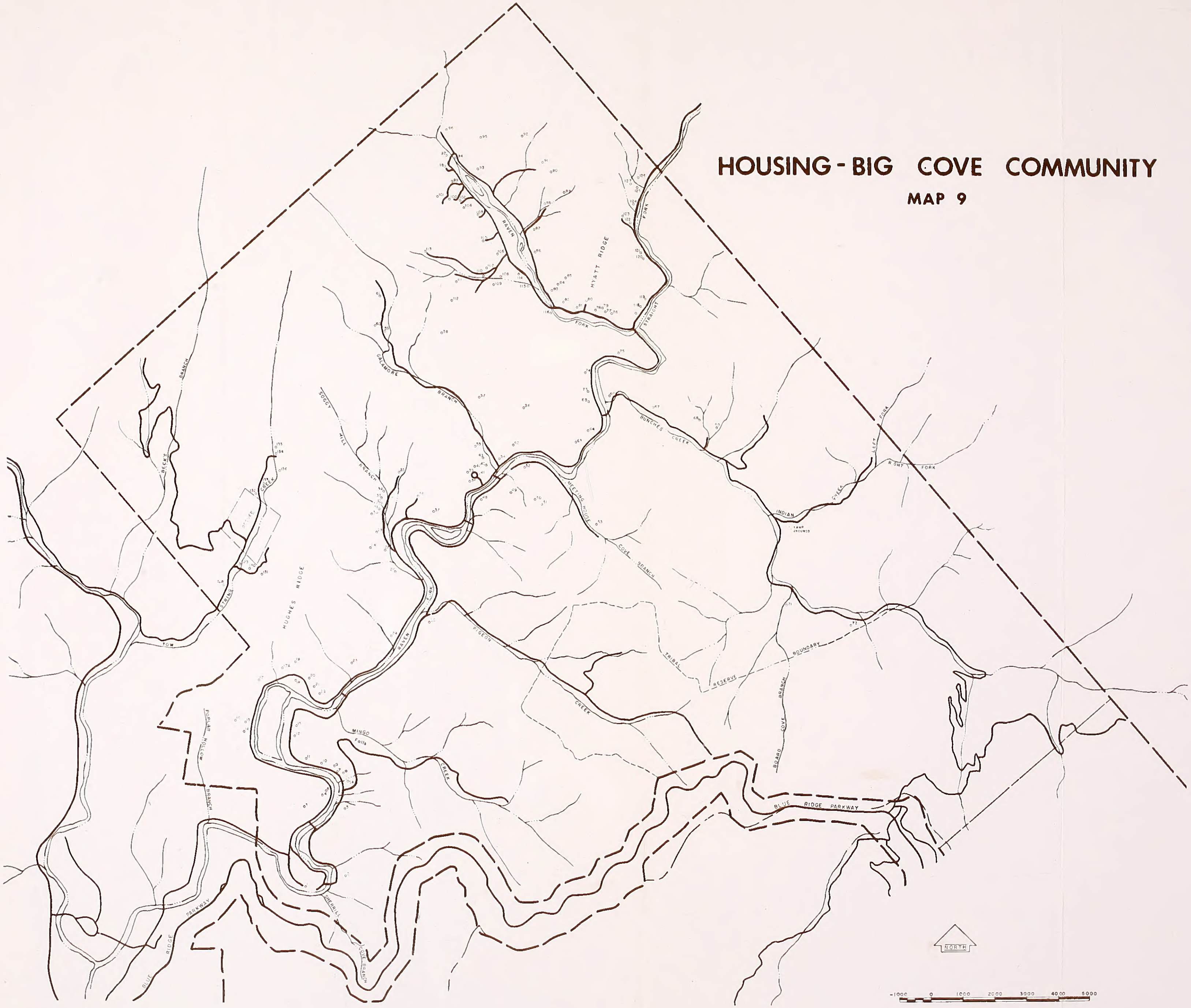
Initiate a program to instruct members of the Eastern Band of Cherokee Indians on financing, insurance and financial responsibilities.

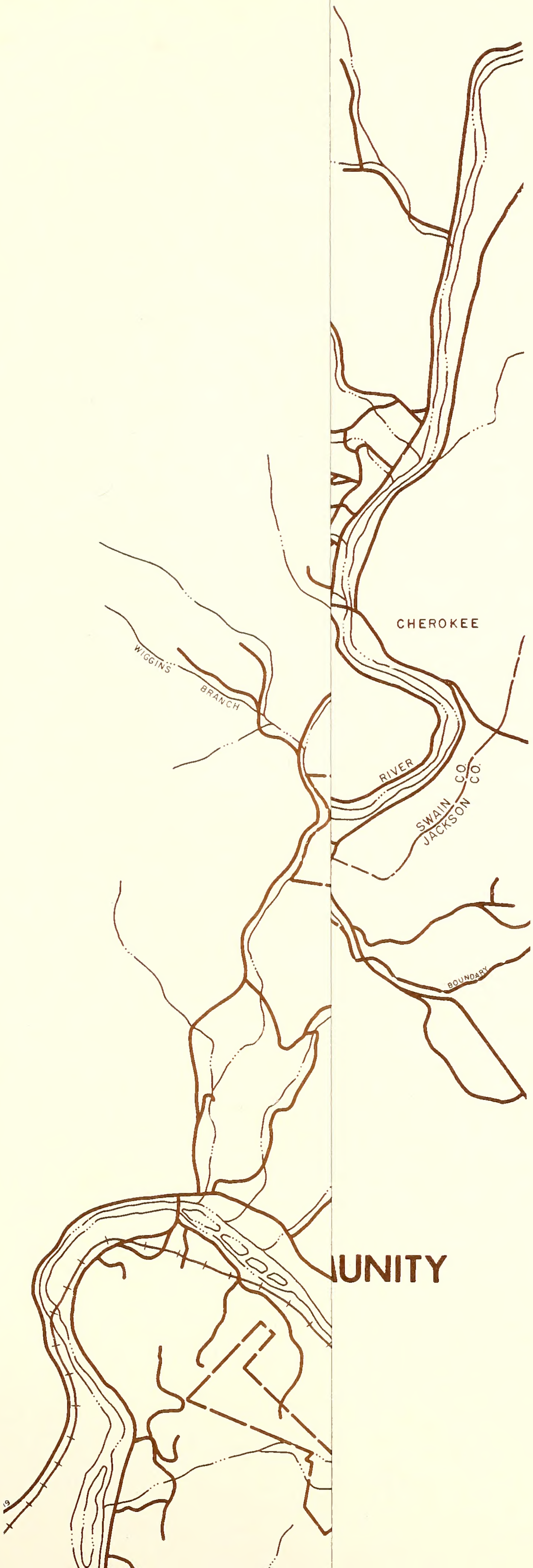
MUNITY

BRANCH
BECKS
TOW
POPLAR HOLLOW BRANCH
BLUE RIDGE PARKWAY
0
5000

HOUSING - BIG COVE COMMUNITY

MAP 9

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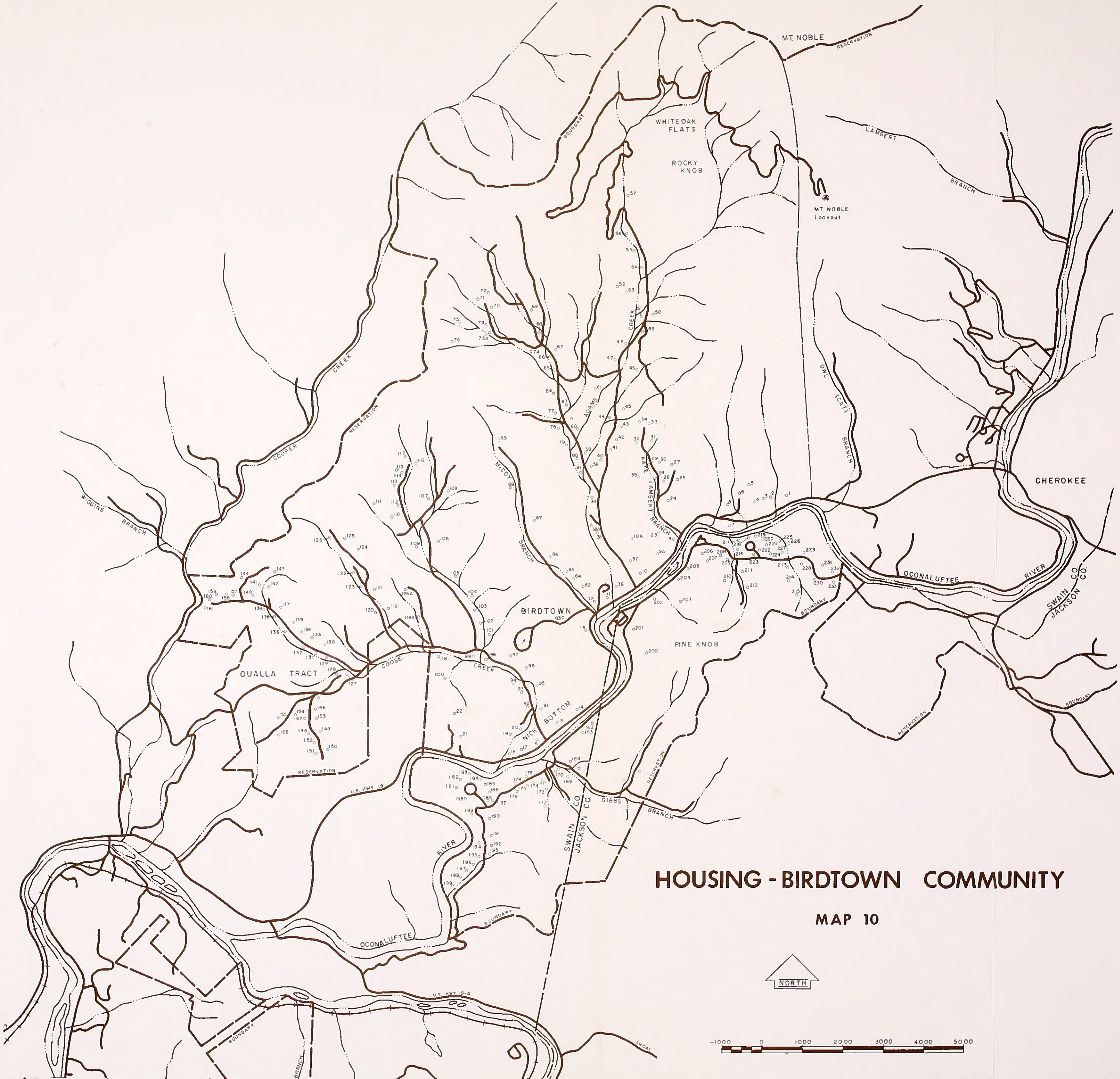
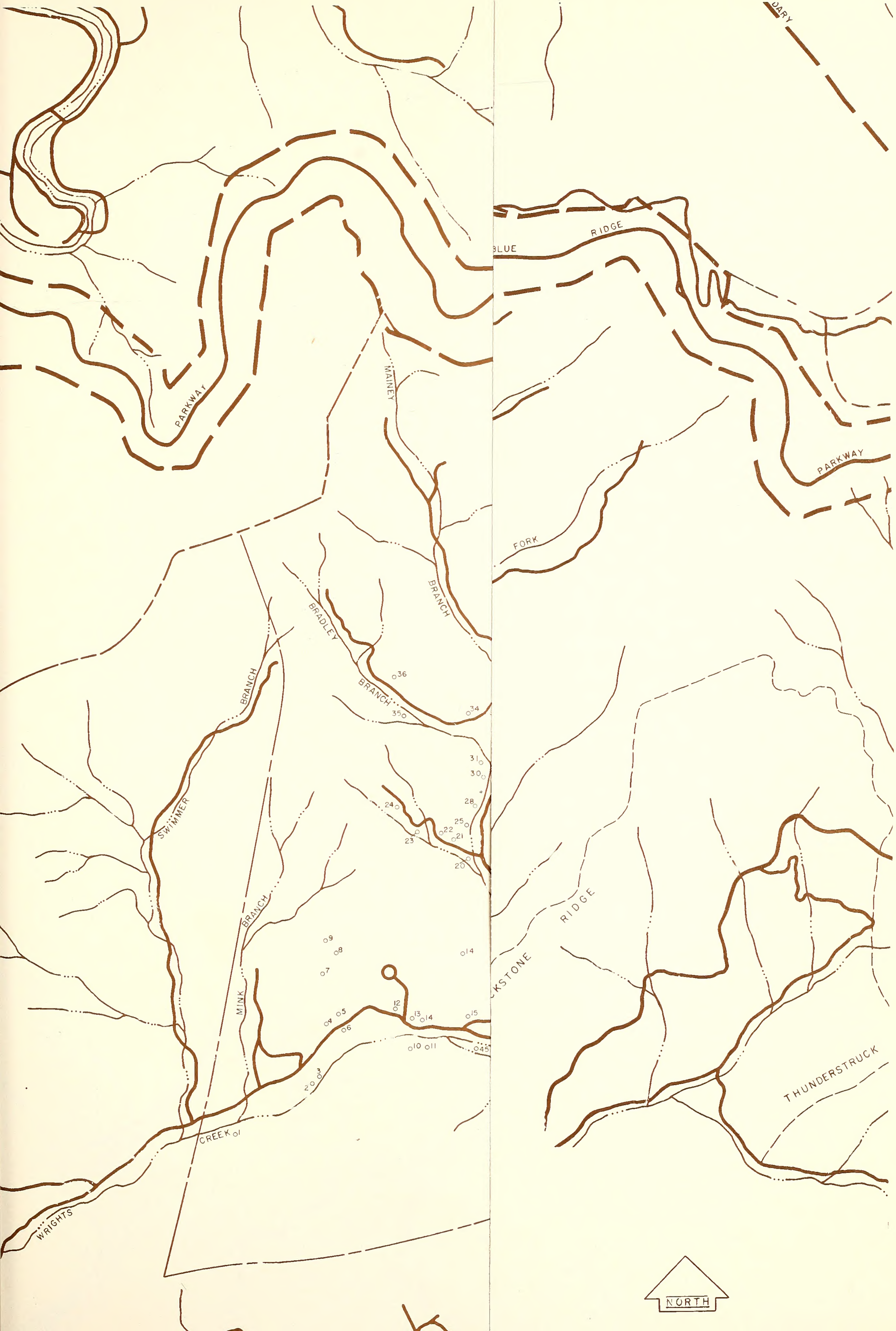
WIGGINS BRANCH
RIVER
SWAIN CO.
JACKSON CO.
BOUNDARY
UNITY
19



HOUSING - BIRDTOWN COMMUNITY

MAP 10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PARKWAY
PARKWAY
MAINEY
BRANCH
FORK
BRADLEY
BRANCH
SWIMMER
BRANCH
MINK
BRANCH
WRIGHTS
CREEK
CKSTONE
RIDGE
THUNDERSTRUCK
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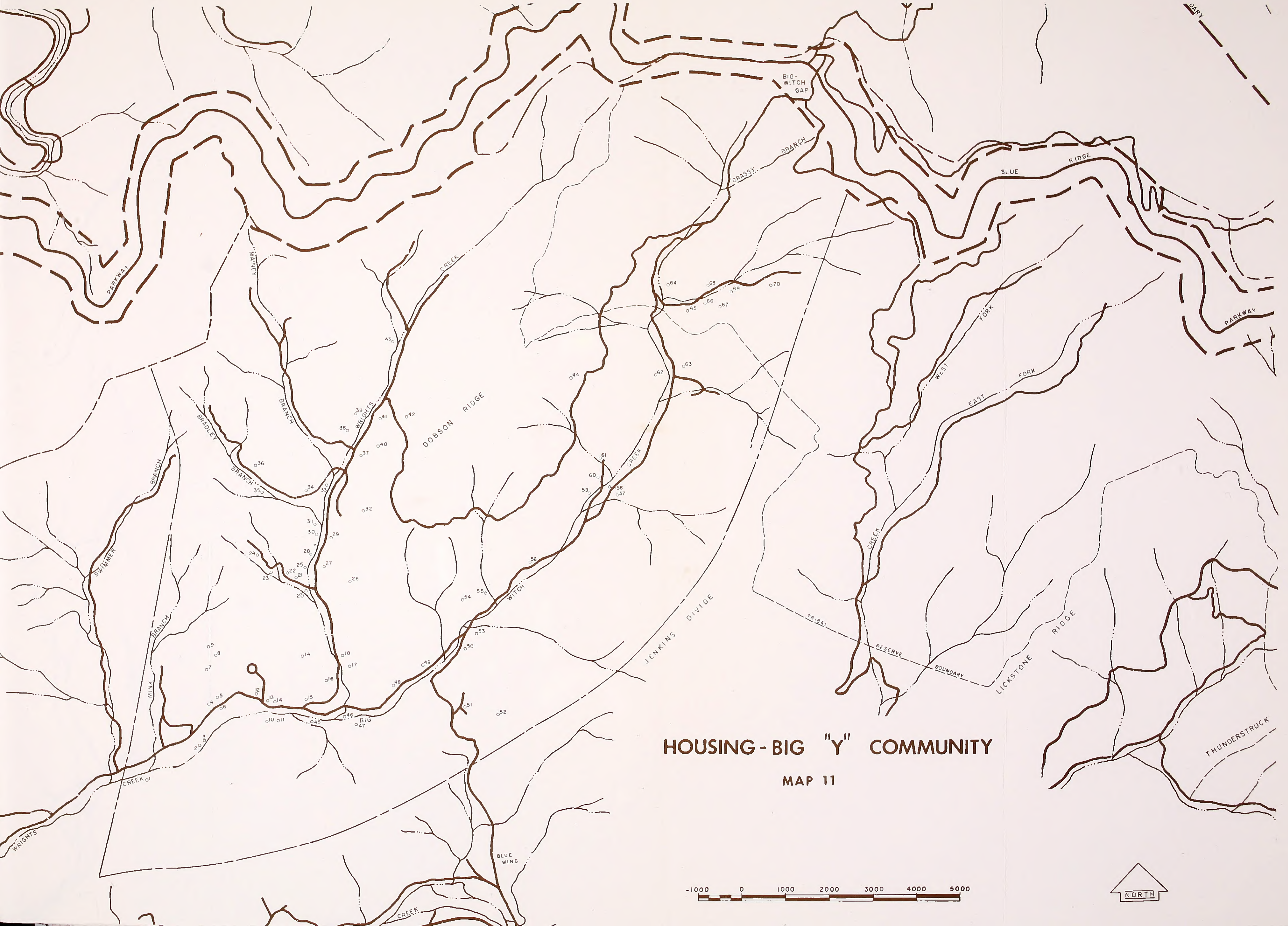
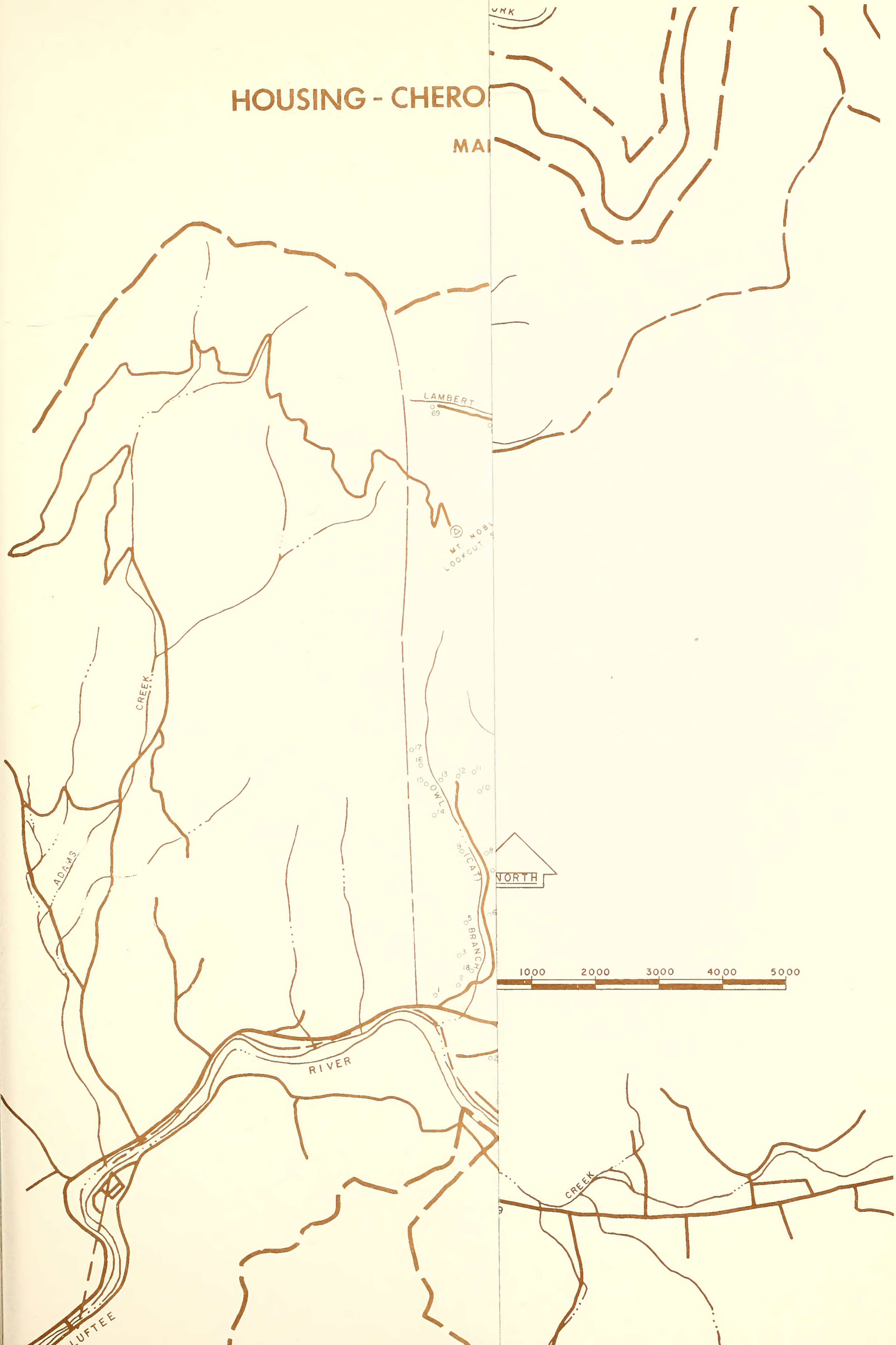


HOUSING - BIG "Y" COMMUNITY

MAP 11

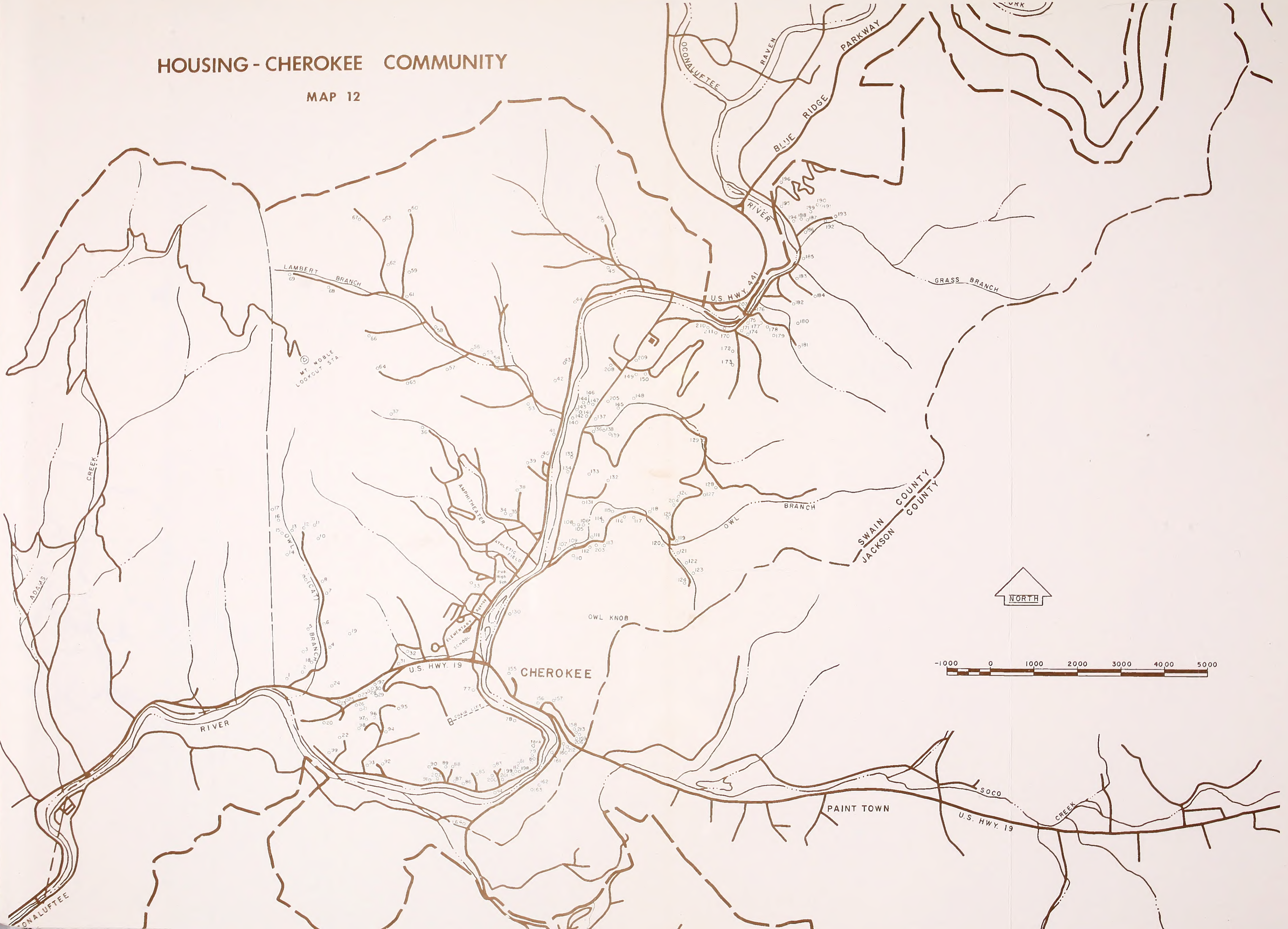
HOUSING - CHERO

MA



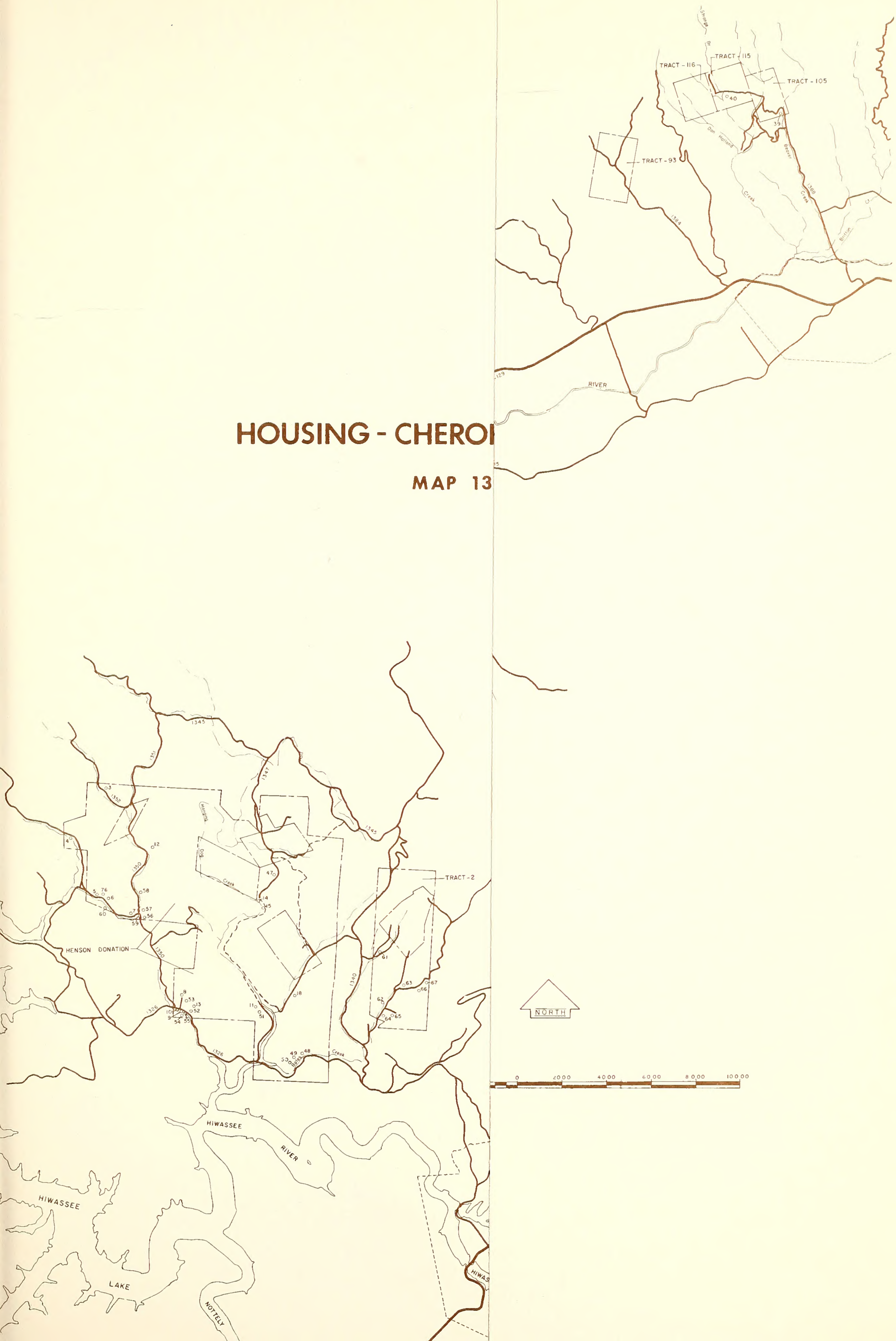
HOUSING - CHEROKEE COMMUNITY

MAP 12



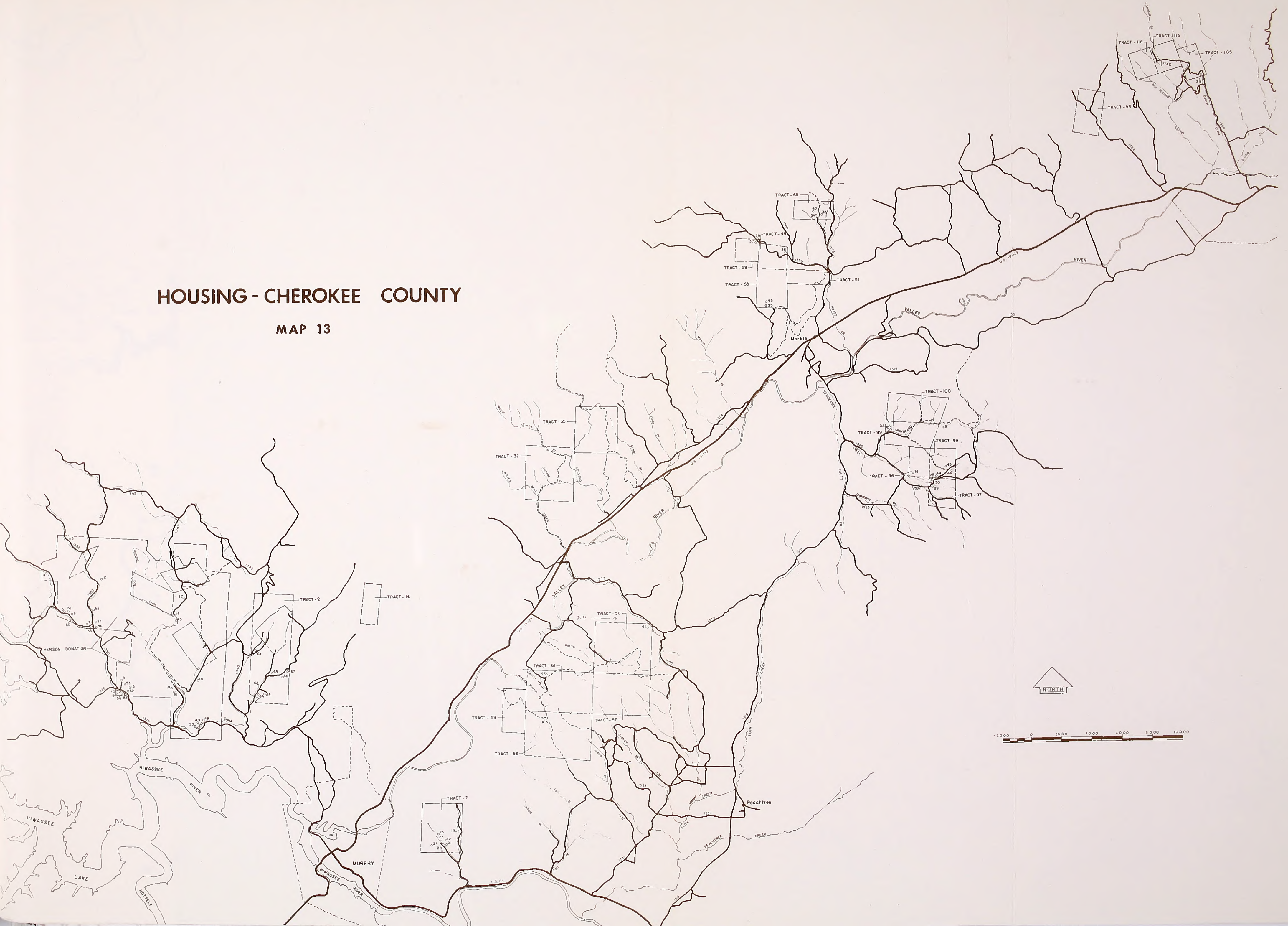
HOUSING - CHERO

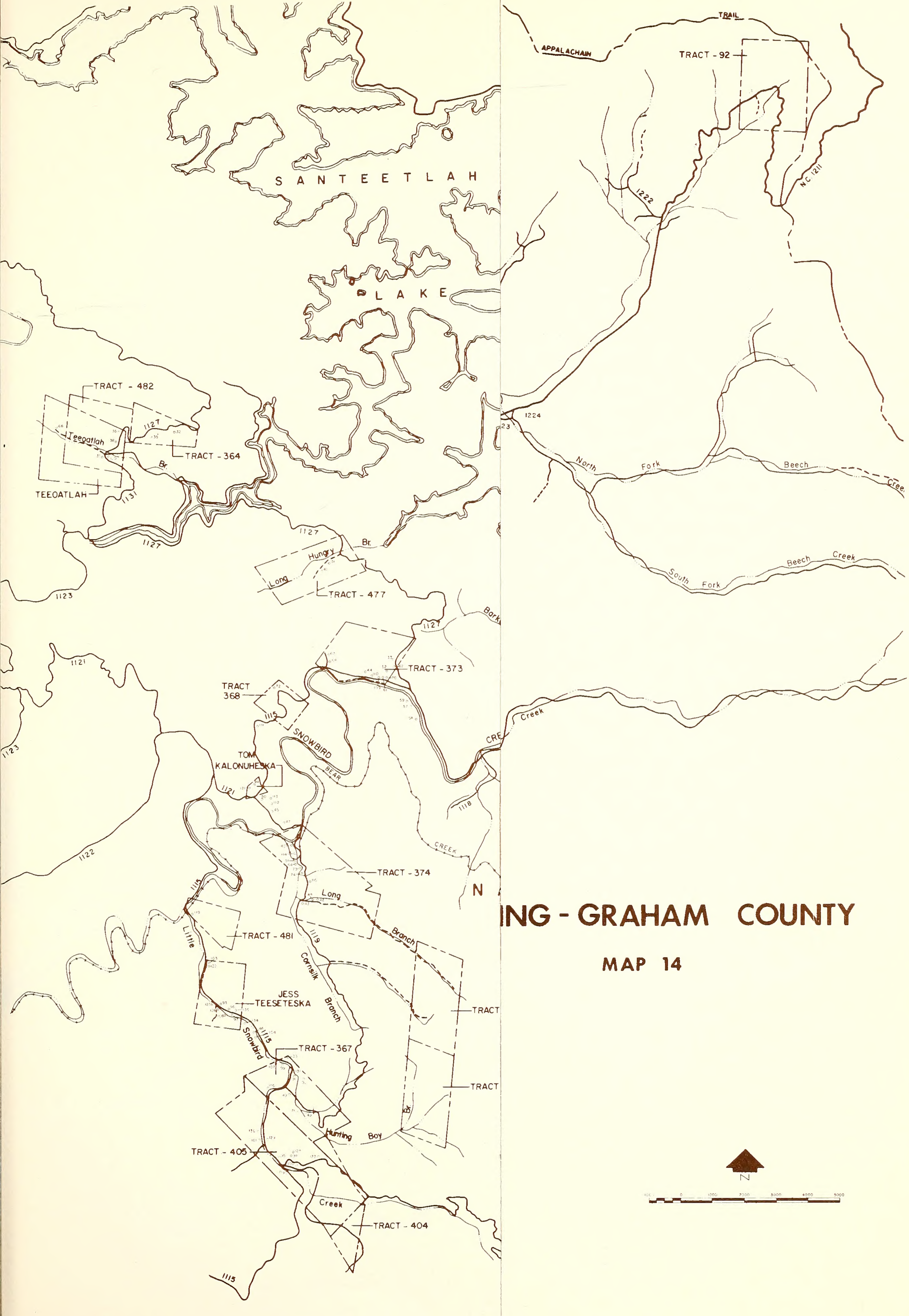
MAP 13



HOUSING - CHEROKEE COUNTY

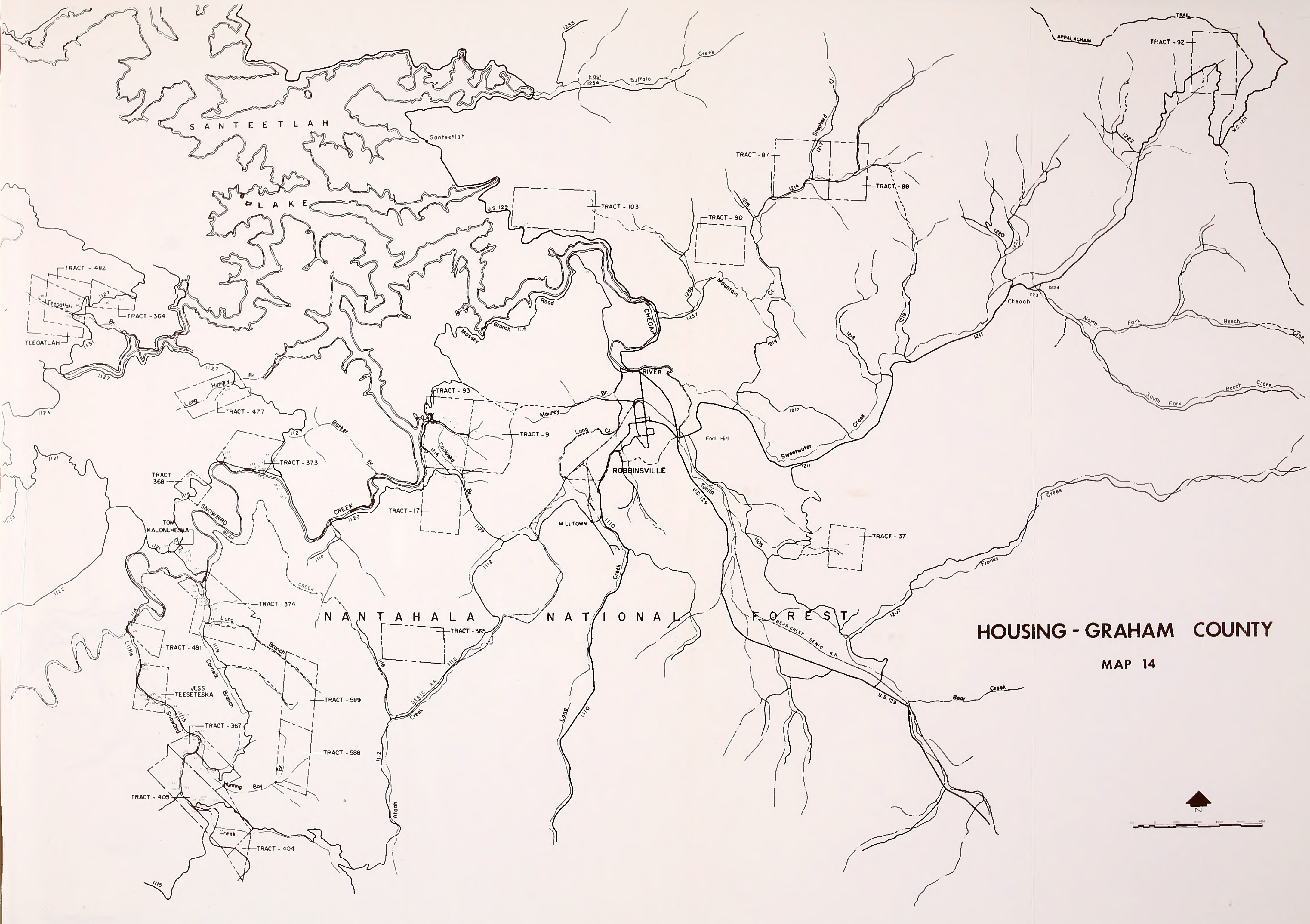
MAP 13





ING - GRAHAM COUNTY

MAP 14

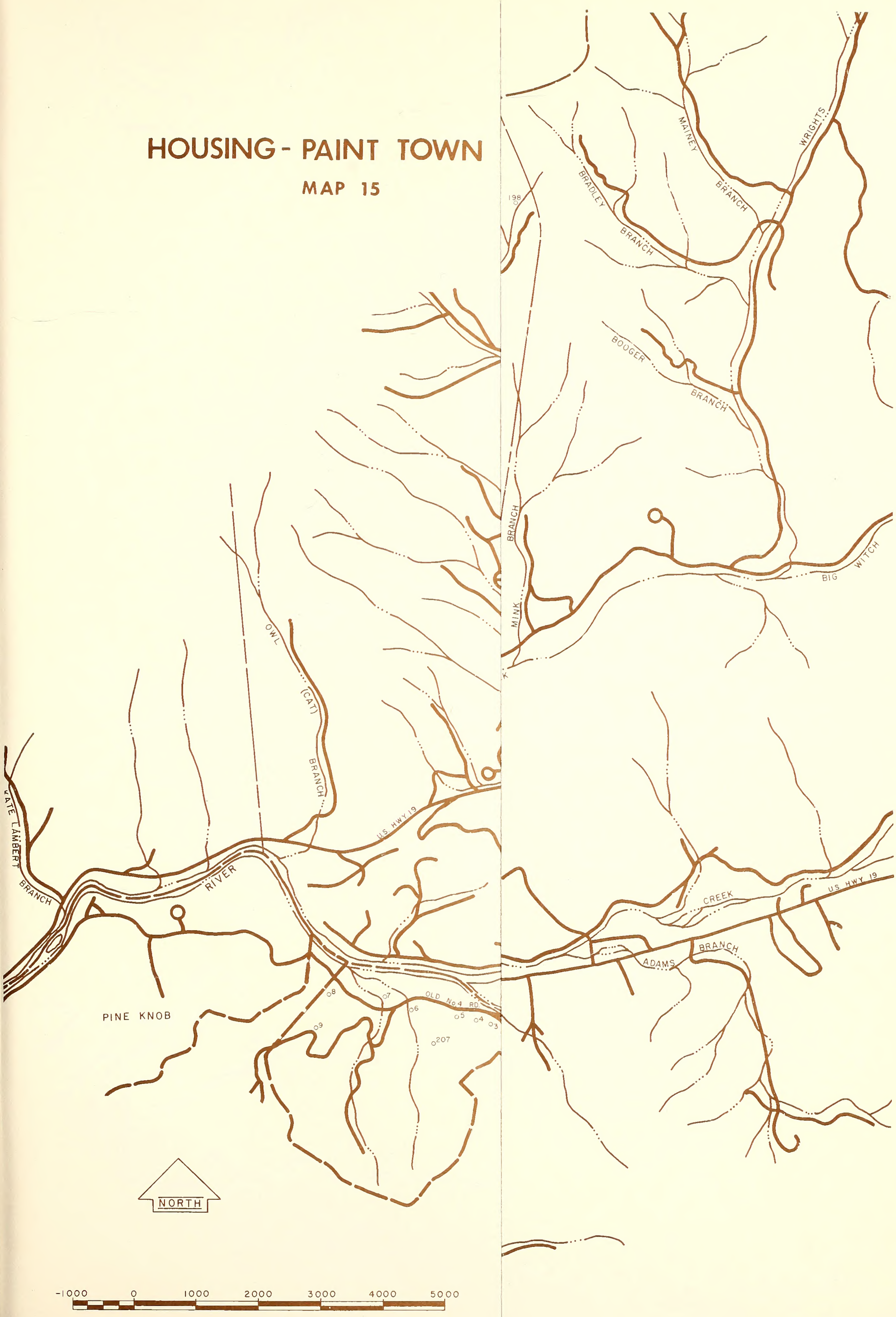


HOUSING - GRAHAM COUNTY

MAP 14

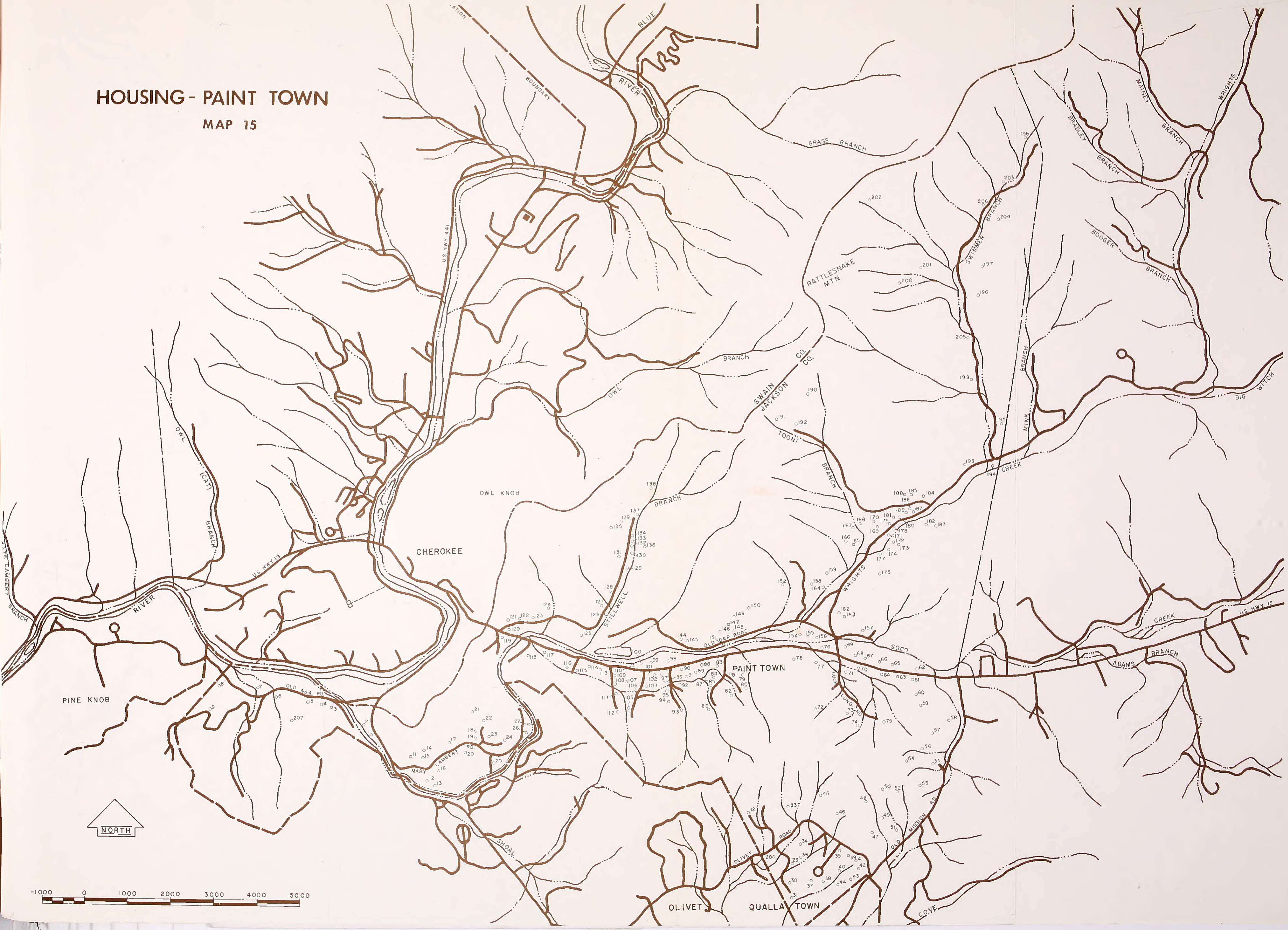
HOUSING - PAINT TOWN

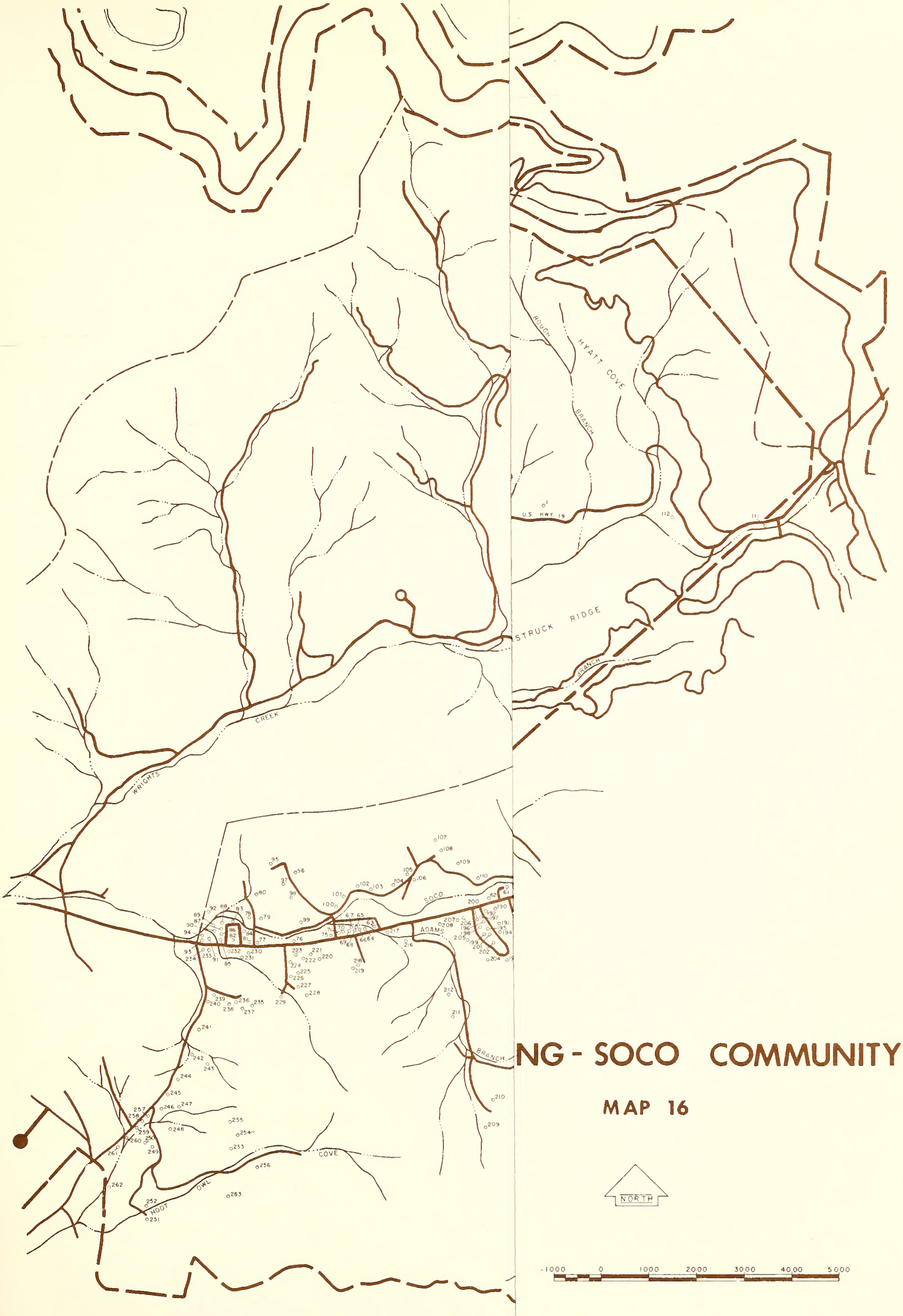
MAP 15



HOUSING - PAINT TOWN

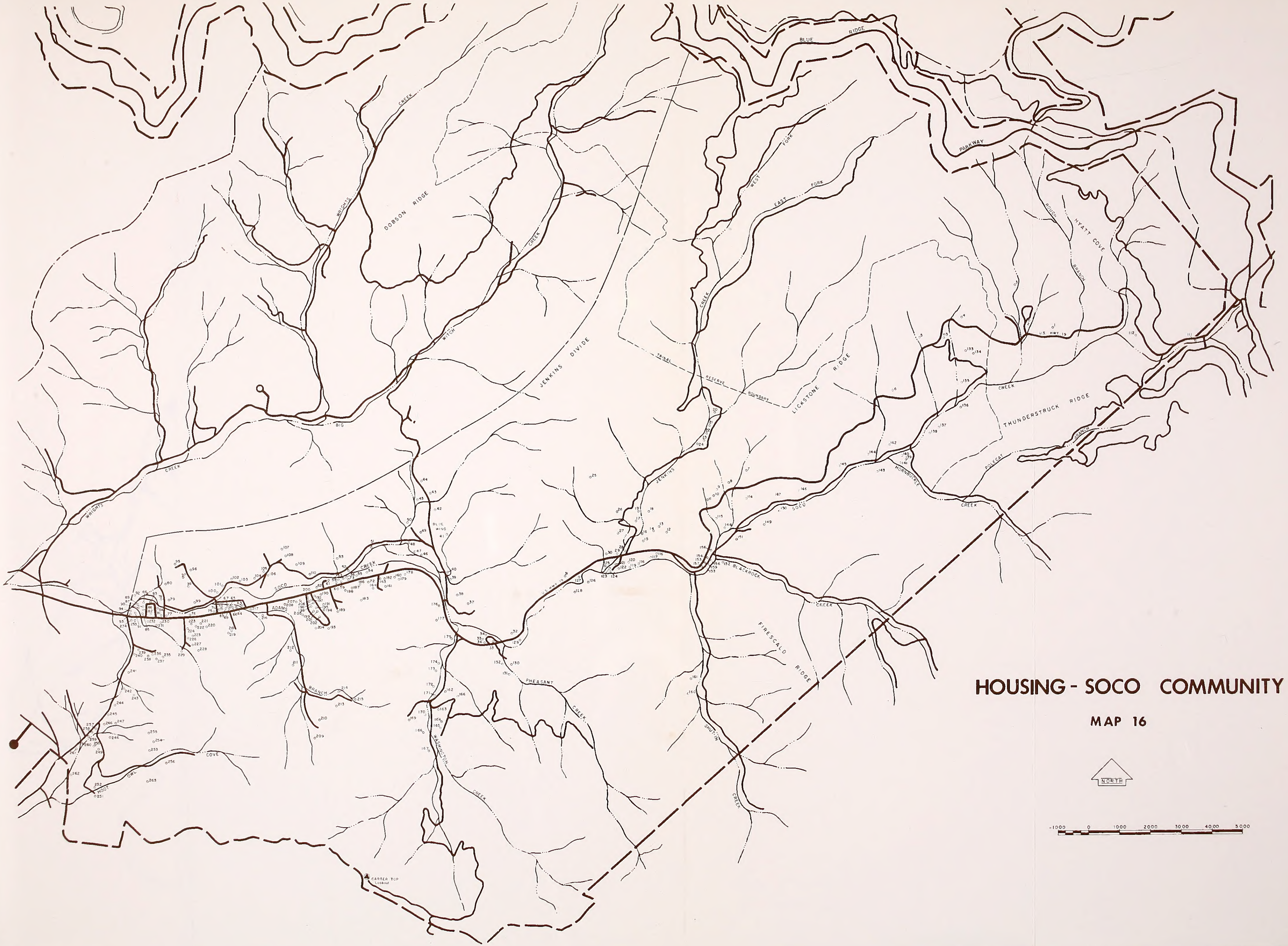
MAP 15





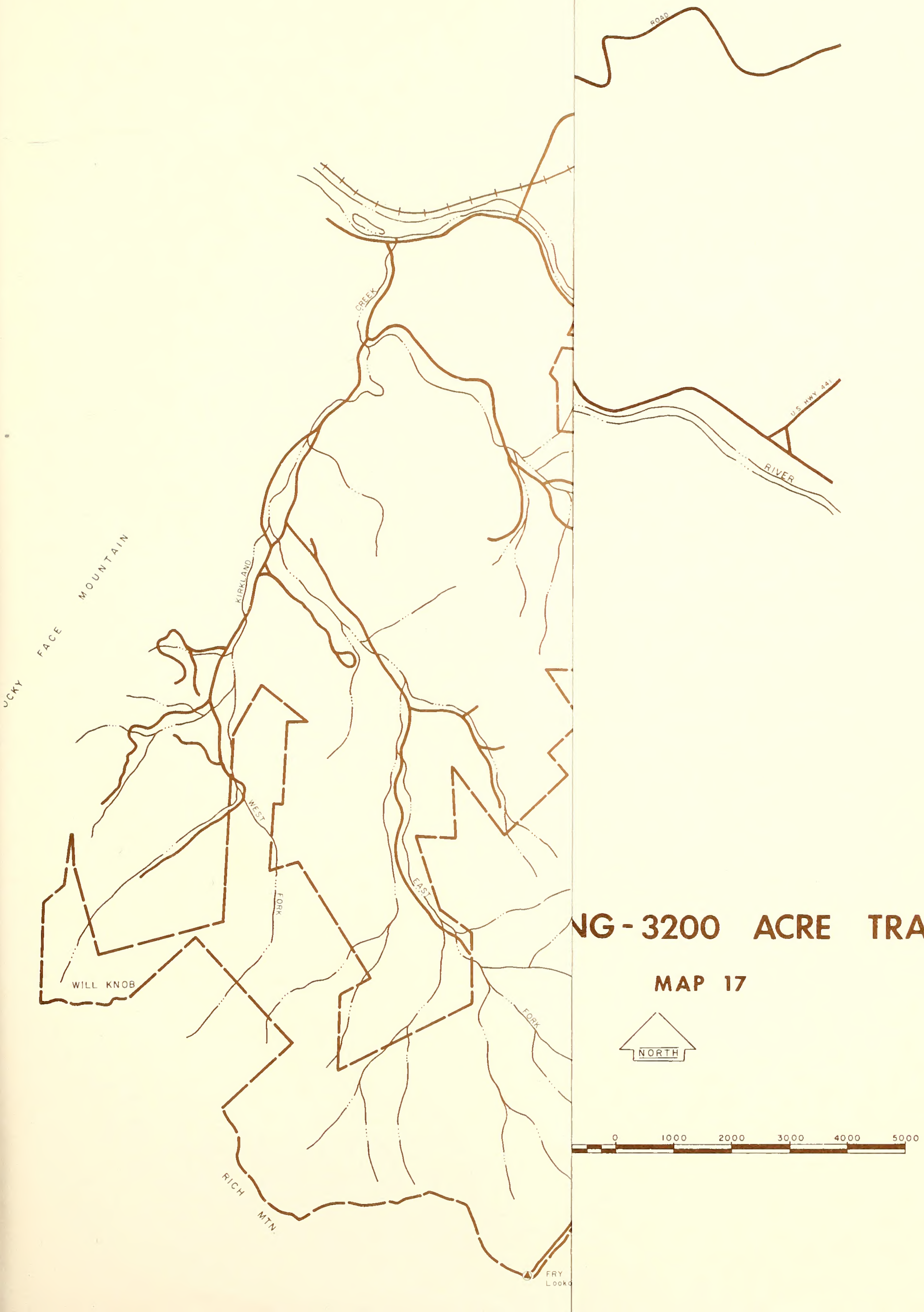
NG - SOCO COMMUNITY

MAP 16



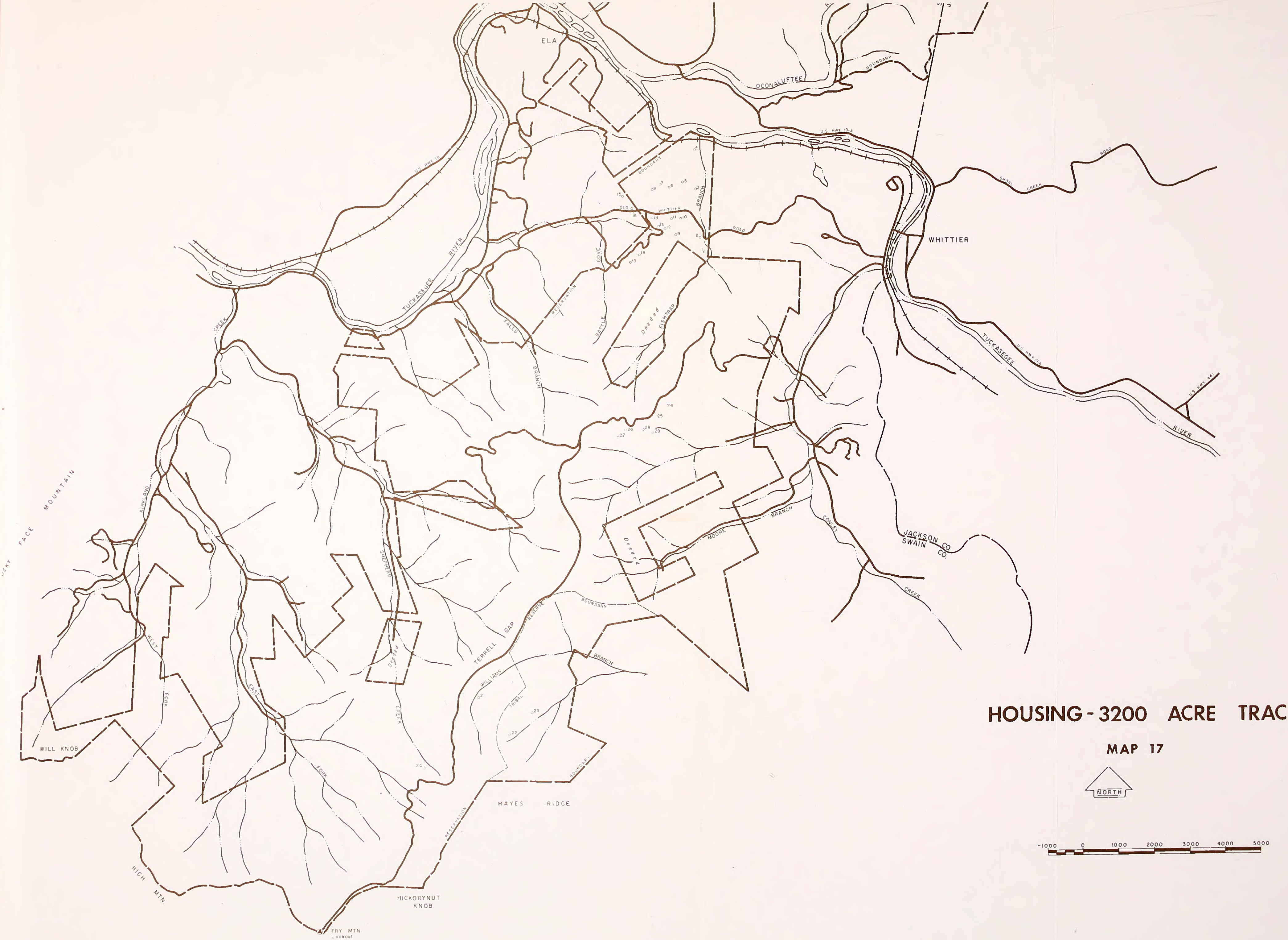
HOUSING - SOCO COMMUNITY

MAP 16



NG - 3200 ACRE TRACT

MAP 17



HOUSING - 3200 ACRE TRACT

MAP 17

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